# LACUS FORUM XXXVI

## Mechanisms of Linguistic Behavior

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# CONCEPTUAL SEMANTICS, SYMBOLIC GRAMMAR, AND THE *DAY AFTER DAY* CONSTRUCTION

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**Abstract:** Though non-canonical, the *day after day* construction is readily described in Cognitive Grammar, given phenomena independently established in a conceptual semantics and the flexibility of symbolic assemblies for the characterization of grammatical structure. It represents a particular kind of temporal iconicity as well as a serial mode of organization also manifested in coordination and a variety of other constructions. So analyzed, the *day after day* construction is seen as con-forming to broader patterns of English grammar.

**Keywords:** Cognitive Grammar, conceptual semantics, constituency, coordination, iconicity, representativeness, serial construction, symbolic assembly, temporal adverb, virtual entity

**Languages:** English

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THE CONSTRUCTION IN (1)a–b is descriptively challenging and theoretically significant. I have used its chain-like nature to argue against the adequacy of *classical constituency* (strictly hierarchical organization) as a general model of syntactic structure (Langacker 1997, 2009: ch. 12). More recently, Jackendoff (2008) has examined it as part of a large family of related constructions, exemplified in (1)c. In terms of how their form maps onto their meaning, he regards them as "sufficiently distant from canonical structures" (p. 27) that the "best hope" for describing them "lies in a theory of grammar that … recognizes the autonomy of syntax from semantics and vice versa" (p. 8).

(1) a. *It rained* ***day after day after day after day after day***.
b. ***Year after year after year*** *they reject my abstract*.
c. *hand in hand*; *door to door*; *country by country*; *man for man*; *layer upon layer*

I am going to describe the *day after day* construction in a theoretical framework that does **not** recognize the autonomy of syntax from semantics.[1] You will not be surprised to learn that this framework is Cognitive Grammar (Langacker 1987a, 1990, 1991, 1999a, 2008a). I will first present some basic notions of Cognitive Grammar (CG), in which an

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[1] A synoptic version of this analysis is found in Langacker (forthcoming).

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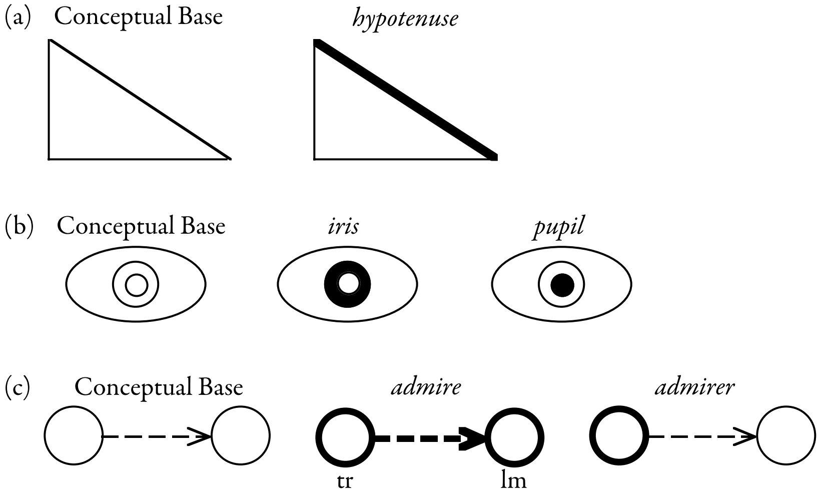

***Figure 1.*** *Examples of profiling.*

independently justified **conceptual** account of semantics supports a **symbolic** account of grammar; instead of being autonomous, grammar is seen from this perspective as being inherently meaningful. I will then provide a description of the *day after day* construction that does not require any new theoretical devices and relates it to broader patterns of English grammar.

1. CONCEPTUAL SEMANTICS. In CG, meaning is identified as **conceptualization**, broadly understood as encompassing any aspect of our experience. Thus included are: (i) ongoing conceptual activity (not just established concepts); (ii) sensory, motor, and emotive experience; and (iii) apprehension of the physical, linguistic, social, and cultural context. **Semantic structures** are conceptualizations employed for linguistic purposes.

Adopting a conceptual semantics implies that an expression's meaning is not determined by objective properties of the situation described. Crucially, we have the ability to **construe** the same situation in many different ways. Among the dimensions of construal are (i) the level of **specificity** at which a situation is characterized, (ii) the relative **prominence** conferred on its elements, and (iii) the **perspective** adopted for viewing it. Linguistic meanings are thus a function of both the conceptual content evoked and the construal imposed on that content.

By specificity—or its converse, **schematicity**—I simply mean the level of precision and detail at which a situation is characterized. It is illustrated by a lexical hierarchy, as in (2). Each term is schematic relative to the more specific expression that follows, which describes the designated entity in finer-grained detail.

(2) *thing* → *object* → *implement* → *tool* → *hammer* → *claw hammer*

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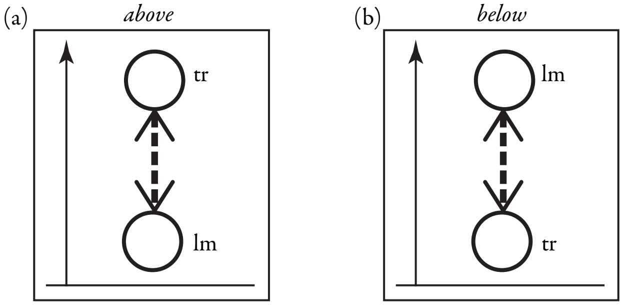

***Figure 2.*** *Trajector/landmark organization.*

Of the many kinds of prominence that can be distinguished, two are especially important for grammar. The first of these is indicated by the heavy lines in **Figure 1**. An expression evokes a certain body of conceptual content, called its **base**. Within this base, it gives special prominence to some substructure, called its **profile**. An expression's profile is what it refers to or designates within its base, a kind of focus of attention. For instance, the word *hypotenuse* evokes as its base the conception of a right triangle, within which it profiles the side opposite the right angle. *Iris* and *pupil* profile different entities characterized by their position in the overall configuration of an eye. The verb *admire* profiles a mental relationship (shown as a dashed arrow) involving two participants (represented as circles). By contrast, the noun *admirer* profiles a participant, the one who holds this attitude. These examples indicate that expressions with the same content can differ in meaning by virtue of their profiles.

The second kind of prominence pertains to the participants in a profiled relationship. These are made prominent to various degrees. The primary focal participant, called the **trajector** (tr), is the one construed as the entity being located, evaluated, or described. Often another participant is made prominent as a secondary focus. This is called a **landmark** (lm). The need for this descriptive construct is apparent from pairs of expressions like *above* and *below*, sketched in **Figure 2**. These expressions have the same content and profile the same relationship (referentially, an *above* relationship is also a *below* relationship). The semantic contrast between them resides in whether the trajector is construed as being located in relation to a landmark at a lower position or one at a higher position. Evidence for this characterization is provided in (3). If one asks *Where is the lamp?*, making it clear that the lamp is the entity being located, the appropriate response is (3)a(i), with the lamp as trajector, rather than (3)a(ii). If one asks *Where is the table?*, these judgments are reversed.

(3) a. *Where is the lamp?*
  (i) *The lamp* **(tr)** *is above the table* **(lm)**. (ii) **The table* **(tr)** *is below the lamp* **(lm)**.
 b. *Where is the table?*
  (i) *The table* **(tr)** *is below the lamp* **(lm).** (ii) **The lamp* **(tr)** *is above the table* **(lm)**.

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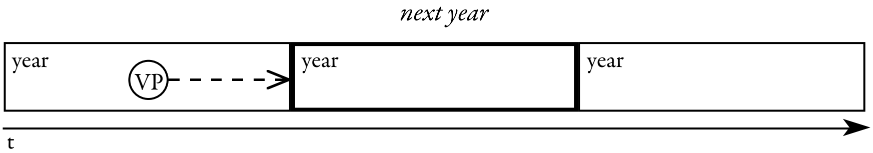

***Figure 3.*** *Example of vantage point.*

Perspective subsumes a number of factors, the most obvious of which is a presupposed **vantage point** (VP). Here I will merely observe that a vantage point is not always spatial, and that the default vantage point is what I call the **ground** (G): the speech event, its participants, the time and place of speaking, and the immediate circumstances. For example, as shown in **Figure 3**, the expression *next year* profiles a span of time characterized in relation to a temporal vantage point normally identified as the time of speaking.

Another perspectival factor is **direction of mental scanning**, exemplified by the contrast in (4). Despite the verb *run* and the prepositions *from* and *to*, nothing in the situation described actually moves or has any inherent directionality. These are matters of how the scene is apprehended for linguistic purposes. The motion reflected in the form of the expressions does not reside in the scene itself, but in how it is mentally accessed by the conceptualizer, who scans along the scar's expanse in building up to a full conception of the profiled relationship. **Fictive motion** of this sort is very common and has been extensively studied in cognitive linguistics (e.g. Matsumoto 1996; Talmy 1996; Matlock 2004; Langacker 2005).

(4) a. *A scar runs from his elbow to his wrist.*
b. *A scar runs from his wrist to his elbow.*

Fictive motion is one illustration of **dynamicity** (Langacker 2001b). Because it resides in cognitive processing, conceptualization is inherently dynamic. That is, it has a "time course"—how a conception develops or unfolds through processing time is often crucial to an expression's linguistic meaning. The contrast in (5) provides another sort of example. The sentences describe the same objective situation by means of the same locative elements. They differ semantically in that (5)a locates the subject by "zooming in" from a larger search domain to a smaller one, whereas (5)b does so by "zooming out".

(5) a. *Your camera is in the study, in the closet, on the top shelf, behind some boxes.*
b. *Your camera is behind some boxes, on the top shelf, in the closet, in the study.*

In addition to construal and dynamicity, a number of basic themes in cognitive semantics merit brief mention. One of these is **embodiment** (Lakoff 1987; Johnson 1987), the notion that conceptualization is grounded in fundamental aspects of human experience: motion, perception, force dynamics, emotion, and social interaction. From this basis, conceptual structure in all its richness and complexity arises through basic cognitive processes—includ-

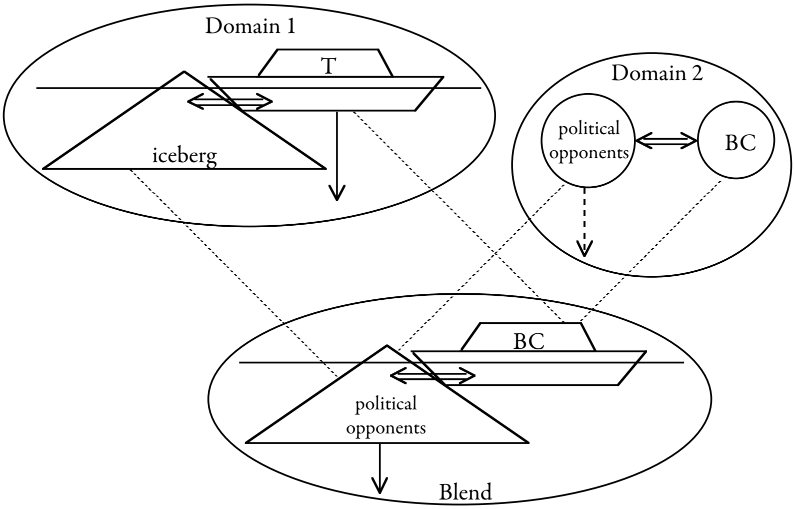

***Figure 4.*** *Example of blending*

ing **abstraction**, **simulation**, and **conceptual integration**—applying repeatedly, at many levels of organization. The resulting mental constructions are often **imaginative**, involving such phenomena as **mental space configurations**, **blending**, **metaphor**, and **fictivity**.

Mental spaces (Fauconnier 1985; 1997) are separate working areas, each hosting a conceptual structure representing some facet of an overall conception. For instance, sentence (6) invokes two mental spaces: the speaker's conception of reality, where Joe's wanting occurs; and a space representing the nature of that desire. On one interpretation, the actress mentioned occupies only the latter, not corresponding to any actual individual. This imagined actress is thus a **fictive** instance of its type.

(6) *Joe wants to meet an actress.*

In blending (Fauconnier and Turner 2002), selected elements of **input spaces** are projected and conceptually integrated to form another space, the **blend**, which is fictive in nature with its own emergent properties. A case in point is (7), characterized in **Figure 4**. The inputs are two domains of knowledge: that pertaining to the Titanic and its fate, and the one pertaining to Bill Clinton and his political opposition. The *if* clause instructs us to form a blend, in which Bill Clinton is blended with the Titanic to form some kind of hybrid entity. Less explicitly, the iceberg is blended with the political opponents, and physical force (double arrow) with political conflict. The second clause describes what happens in this blended space: the opposition/iceberg sinks. Its sinking is projected back into the second input domain to indicate the negative effect of the conflict on Clinton's opponents.

(7) *If Clinton were the Titanic, the iceberg would sink.*

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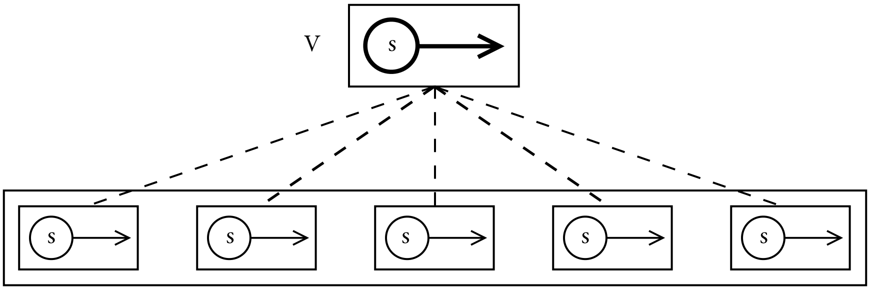

***Figure 5.*** *Generalization expressed by representative instance.*

Metaphor (Lakoff & Johnson 1980) is a special case of blending, where the source and target domains function as inputs. More directly relevant here is fictivity, which we have already encountered. Fictive motion, as in (4), involves the simulation of actual motion, i.e. the autonomous occurrence of aspects of the processing activity inherent in the apprehension of actual motion. Simulation is coming to be recognized as a basic factor in conceptualization and linguistic meaning generally (Barsalou 1999; Matlock 2004; Zwaan et al. 2004; Bergen 2005). Also, like the actress in (6), many entities referred to linguistically are fictive (or "virtual") in nature (Langacker 1999b, 2005). This is so even in the description of actual occurrences.

One type of example is (8), representing a generalization over a number of actual events. Possibly, as shown in **Figure 5**, there were five events of being surprised involving five different students. Yet the linguistic description of this complex occurrence is all in the singular. As is always the case with *every*, the student referred to by the subject is a fictive instance of its type. The event explicitly described by the predicate, *was surprised*, is likewise fictive in nature. The label V indicates that the profiled event and its participant are **virtual** entities, invoked to be **representative** of any number of actual ones. Through a process of abstraction, the profiled occurrence is conjured up as a means of generalizing over events common to all members of a contextually identified set of students.

(8) *Every student was surprised.*

2. SYMBOLIC GRAMMAR. A conceptual semantics makes possible a symbolic account of grammar, in which every grammatical element has some kind of meaning (often highly schematic). The only elements posited in CG are **semantic structures**, **phonological structures**, and **symbolic structures** obtained by pairing the two. Simpler symbolic structures can be assembled into more complex symbolic structures. In this way **symbolic assemblies** of any degree of complexity can be formed. It is claimed that only symbolic assemblies are needed for the description of lexicon and grammar, which form a continuum.

Here I can offer only the briefest sketch of this framework, merely touching on certain matters that merit extended discussion. One contentious issue is the nature of basic grammatical categories. An essential point is that an expression's grammatical class depends on

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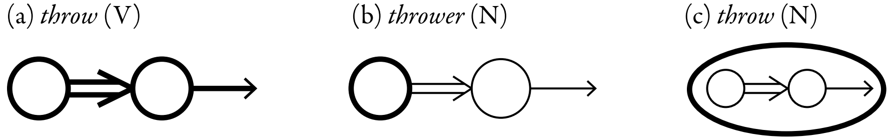

***Figure 6.*** *Effect of profiling on grammatical category.*

the nature of its profile (not on its overall content). In particular, a nominal expression (a noun or a noun phrase) profiles a **thing** (abstractly defined). A verbal expression (a verb or a finite clause) profiles a **process**, i.e. a relationship followed sequentially in its evolution through time. Adjectives and prepositions profile different kinds of **non-processual** relationships.

The effect of profiling is seen in **Figure 6**. The verb *throw* profiles a process in which the exertion of force (double arrow) results in rapid motion (single arrow). Even though it has the same content, *thrower* is a noun rather than a verb because it profiles only the agentive participant, which is a thing (not a process). The noun *throw* (as in *He made a good throw*) also designates a thing, consisting of one process instance. Shown as an ellipse, this profiled thing is obtained by **conceptual reification** of the process (Langacker 2008a: §4.2.2).[2]

A complex expression, also called a **construction**, is an assembly of symbolic structures. A typical construction comprises **component** symbolic structures that are integrated—both semantically and phonologically—to form a **composite** symbolic structure. Integration is based on **correspondences** (indicated by dotted lines); corresponding elements project to the same element at the composite structure level. The phonological integration symbolizes the conceptual integration.

Depicted at the lower right in **Figure 7** (overleaf) is the integration of the component symbolic structures *from* and *Brazil* to form the composite expression *from Brazil*. Their semantic integration hinges on a correspondence between the preposition's landmark and the profile of the noun. A heavy-line box indicates that the preposition functions as **profile determinant** at this level, i.e. it is the component structure whose profile is inherited at the composite structure level. So like *from*, the composite expression *from Brazil* profiles a non-processual relationship (rather than a thing). This semantic integration of *from* and *Brazil* is symbolized by their phonological integration, where *from* directly precedes *Brazil* in the speech stream.

Symbolic assemblies exhibit **constituency** to the extent that a composite structure at one level of organization functions in turn as component structure at a "higher" level. In **Figure 7**, the two composite expressions *a woman* and *from Brazil* function as components integrated to form the higher-level composite structure *a woman from Brazil*.[3] At this level,

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[2] That an event should be construed as an abstract thing is no more remarkable than a mass being construed as a single bounded entity, like *the flock in a flock of sheep*.

[3] In the former, the profile of *woman* corresponds to a schematic thing profiled by the indefinite article, which specifies its relation to the ground (G).

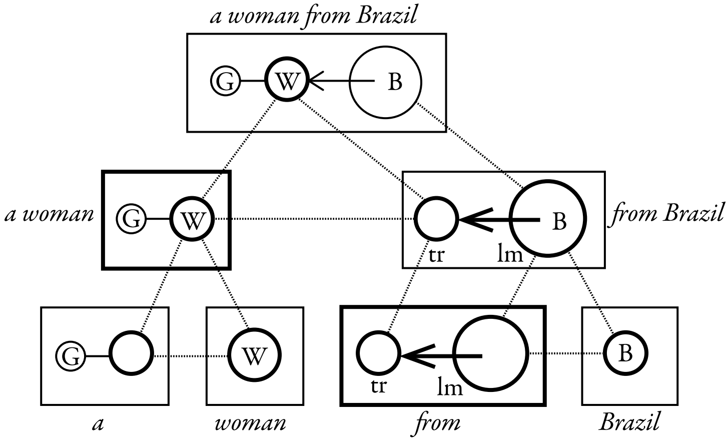

***Figure 7.*** *A symbolic assembly.*

the nominal expression functions as profile determinant, so the overall expression profiles the woman.

Of course, this assembly follows regular grammatical patterns. In CG, these patterns take the form of **constructional schemas**, i.e. schematized symbolic assemblies. These are abstracted from occurring expressions and subsequently serve as templates for constructing and assessing novel expressions.

Given symbolic assemblies properly described in terms of correspondences, profiling, and trajector/landmark alignment, basic grammatical relationships can be characterized semantically. A **subject** is a nominal whose profile corresponds to the trajector of a profiled relationship. In **Figure** 7, *a woman* is thus the subject of both *from* and *from Brazil* (although the term is often limited to clausal trajectors). Likewise, an **object** is a nominal whose profile corresponds to the landmark of a profiled relationship. *Brazil* is thus the object of the preposition *from*. Observe that these definitions are independent of constituency, being based exclusively on conceptual factors.

A **head** is commonly defined as the element which determines the grammatical category of a larger expression containing it. This is equivalent to saying that a head is the **profile determinant** at a given level of organization, granted the CG claim that profiling determines category membership. In **Figure** 7, *from* is thus the head within the preposition phrase, and *a woman* within the overall expression. A **complement** can then be described as a component structure which **elaborates**—i.e. which specifies in finer detail—a salient substructure of the head. *Brazil* is thus a complement of *from*, as it elaborates the preposition's schematic landmark. Conversely, a **modifier** is a component structure with a salient substructure **elaborated by** the head. The prepositional phrase *from Brazil* is thus a modifier because the head, *a woman*, elaborates its schematic trajector.

Although **Figure** 7 resembles a classical phrase tree of the sort employed in generative grammar, the symbolic assemblies posited in CG are significantly different. For one

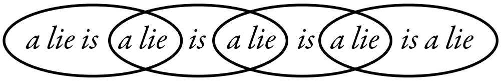

***Figure 8.*** *Chain-like symbolic assembly.*

thing, phrase trees are conceived as purely formal syntactic objects, whereas each element in a symbolic assembly has both semantic and phonological import. Moreover, a hierarchical arrangement like **Figure 7** is only one form symbolic assemblies can assume. Tree-like structures are not fundamental, but arise as a special case from more basic phenomena. In the last analysis, symbolic assemblies consist in any configuration of **conceptual groupings**, **phonological groupings**, and **symbolic links** between them (Langacker 1997). Classical constituents are symbolic structures in which a certain kind of conceptual grouping happens to be symbolized by a certain kind of phonological grouping. The phonological grouping is based on temporal adjacency. Semantically, as seen in **Figure 7**, a classical constituent emerges when correspondences between elements of two component structures result in a composite conception that subsumes their content and has a single overall profile. Hierarchical organization being basic to cognition, constituents of this sort are very common (even typical). However, a constituency hierarchy does not invariably emerge, nor is a single hierarchy ever exhaustive of the groupings relevant to semantic and grammatical description.

In particular, some constructions are most straightforwardly analyzed as basically linear, a chain-like succession of roughly similar symbolic structures. In such an assembly, the connections are mainly local, consisting in correspondences between elements of adjacent structures in the chain. Any hierarchical arrangement which thus emerges is also local rather than global: instead of **nesting** to form a single, well-behaved, multilevel hierarchy, locally-defined constituents **intersect** in pairwise fashion.

A case in point is (9), where slashes (/) indicate slight pauses. There is no evident reason to posit an overarching composite conception and a single overall profile. On the face of it, what we have instead is a chain-like assembly involving local connections between a subject (*a lie*) and a predicate (*is a lie*). Presumably these local connections give rise to clausal constituents, each profiling a relationship of identity. But if so, the clauses intersect, as shown in **Figure 8**, rather than being arranged hierarchically (cf. Lambrecht 1988; Langacker 2009: ch. 12).

(9) *A lie / is a lie / is a lie / is a lie / is a lie.*

Another example is complementation, as in (10). Such expressions are normally described as having the nested structure in (10)a. However, intonation suggest the “flat” constituency in (10)b. From the standpoint of CG, the construction can perfectly well be analyzed in terms of the chain-like organization in **Figure 9(a)** (overleaf). This symbolic assembly is based on local connections between clausal components, each of which specifies a proposition evoked schematically by its predecessor. The wedges (>) indicate that they are accessed sequentially, each representing an **intonational grouping** as well as a **window of attention**

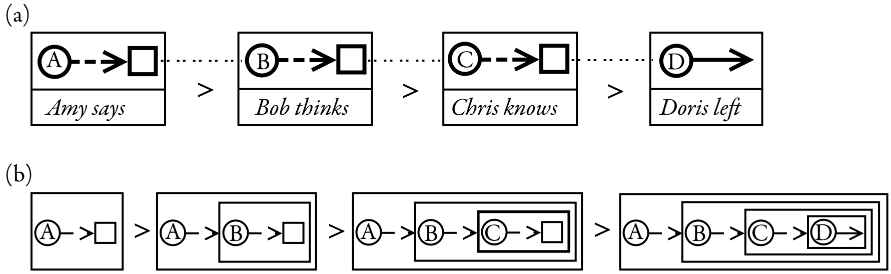

***Figure 9.*** *Serial analysis of complementation.*

in which a single element—the clausal process—is focused as the profile (Langacker 2001a, 2008b). There is thus a succession of profiles, rather than a single overall profile. On this account the hierarchical arrangement in (10)a is an aspect of **semantic** structure: the successive embedding of mental spaces. Through the correspondences indicated, the grammar does provide instructions for building this layered conception, which proceeds step by step as shown in **Figure 9(b)**. But there is no evident basis for positing **grammatical** constituents larger than clauses or presuming that the sentence as a whole profiles the act of saying.

(10) a. *[Amy says [Bob thinks [Chris knows [Doris left.]]]]*
b. *Amy says / Bob thinks / Chris knows / Doris left.*

3. ASPECTS OF ENGLISH GRAMMAR. Having considered the theoretical and descriptive notions required for the *day after day* construction, we turn now to relevant aspects of English grammar: adverbial expressions, serial constructions, and temporal iconicity.

3.1 TEMPORAL ADVERBS. Expressions like *day after day* seem to be adverbial in function but nominal in form. Yet they are not really typical in either respect. Adverbial expressions are generally relational in nature, and are commonly headed by prepositions (e.g. *after sunset*; *in the morning*). By contrast, *day after day* appears to be headed by a noun: *day*, which profiles a span of time (a type of thing). It is not however typical of either a simple noun (due to its complexity) or to a full nominal (not being grounded by a determiner). A precise description will be offered later. For now it suffices to acknowledge its nominal character.

(11) a. *It rained {after sunset / day after day / the whole month / yesterday}.*
b. *{In the morning / Week after week / Every morning / Yesterday} it rained.*

There are of course other cases of nominal expressions that function as temporal adverbs (e.g. *the whole month*; *every morning*; *yesterday*). In the past I have tried to accommodate their adverbial function by positing relational variants, as shown for *yesterday* in **Figure 10(a)**. The day prior to the ground, which is profiled by *yesterday* in its use as a noun, serves instead as landmark of a profiled relationship, the trajector being a schematic process temporally

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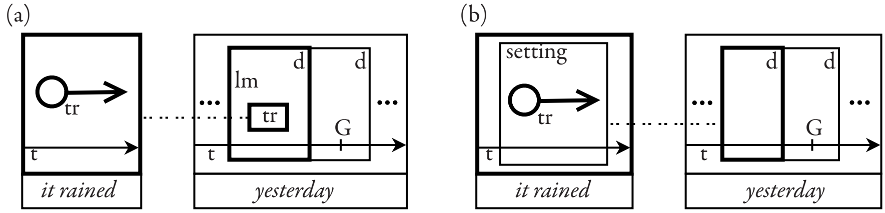

***Figure 10.*** *Alternate descriptions of a temporal adverbial construction.*

located in that time span. As a relational expression, *yesterday* can modify a clause like *it rained* by virtue of a correspondence equating its trajector with the profiled clausal process.

While this is a possible analysis, I have come to favor a more straightforward alternative.[4] Not every relationship conveyed linguistically has to be coded by a separate morphological element profiling that relationship. Given the flexibility of symbolic assemblies (which are not limited to classical predicate-argument configurations), a relationship may instead emerge from the global meanings of component elements. On this account, shown in **Figure 10(b)**, *yesterday* is simply a noun that profiles a span of time. The temporal relationship reflects the overall meaning of the clause *it rained*: the specification (always lurking in the background) that such an event occurs within some **temporal setting** (Langacker 1987b). The integration of the two component structures is thus effected by a correspondence between the setting evoked by the clause and the time span profiled by the noun. The time span is thereby related to the event despite the absence of any element that profiles their relationship. Observe that there is no mismatch here between syntax and semantics. The syntax includes the construction employed, which specifies this correspondence as an aspect of **constructional meaning** (Goldberg 1995).

It is thus quite possible for *day after day*, despite its nominal character, to function adverbially in the sense that a grammatical construction specifies how the time span it designates relates to the profiled event. The next step is to spell out more precisely the nature of this temporal specification. We can start by comparing *day after day* to other sorts of temporal expressions, exemplified by those in **Figure 11** (overleaf). As it turns out, it is not directly analogous to any of them, but it does share certain features with some, notably **11(b)** and **(f)**.

As shown in **Figure 11(a)**, an adverbial phrase like *in the morning* simply locates the profiled process—represented as a bar—within a certain span of time. By contrast, *day after day* does not specify a particular, well-delimited temporal location. While it does invoke a time span, this can be of any length provided that it consists of multiple days, in each of which there is rain. In this respect *day after day* is comparable to *every day*, sketched in diagram **(b)**. A consequence of using *every* is that the day and the profiled event are virtual entities (V) invoked in order to make a generalization; they represent the abstracted com-

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[4] First prompted by an analysis of locatives in Mixtec (Langacker 2002), this alternative has the advantage of not requiring relational variants for an open-ended set of complex nominals (*the whole month*, *every morning*, etc.).

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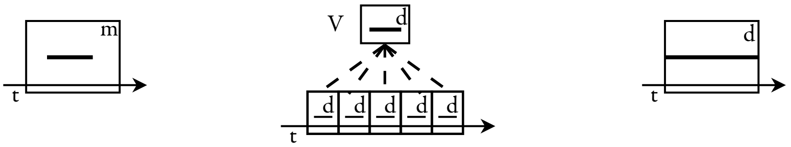
(a) Simple Location
*in the morning*

(a) Distributed Location
*every day*

(c) Bounded Duration
*the whole day*



(d) Metric Duration
*(for) three days*

(e) Non-Metric Duration
*a long time*

(f) Non-Metric Duration
*for days*

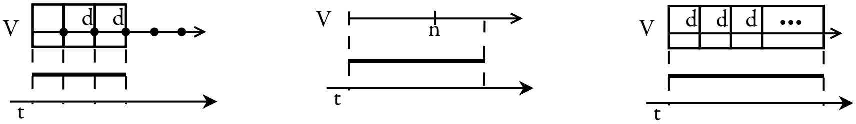


***Figure 11.*** *Composite semantic structures for expressions of the form* It rained X.

monality of any number of actual days and occurrences.[5] The days explicitly mentioned in the *day after day* construction are also virtual entities, not any specific days. Observe in this regard that only two days are mentioned in the sentence *It rained day after day*, which is nonetheless interpreted as meaning that the rain lasted for more than just two. The days explicitly referred to are merely representative of the actual days involved. Especially in longer sequences (e.g. *It rained day after day after day after day*), they evoke and highlight the extended duration of the profiled occurrence. Still, by emphasizing duration *day after day* stands in contrast to *every day*, which specifies a complex or distributed location.[6]

Various kinds of durational adverbs can be distinguished. As shown in **Figure 11(c)**, *the whole day* indicates that the clausal process extends throughout a specific, bounded span of time. By contrast, the adverbs in **11(d)–(f)** specify duration but not any particular temporal location. They share with *every day* the feature of invoking virtual entities, notably an abstract scale for comparing or measuring duration. In the case of **(d)**, *It rained (for) three days*, the days mentioned are also virtual—instead of indicating an actual span of time (as in *those three days*), they are simply invoked as units of measurement, marking points along the scale (cf. *Three days is a long time*). Naturally they **correspond** to actual days, those of the time span they measure, but they cannot just be **identified** with those days.

Alternatively, the specification of duration can be non-metric, as in **11(e)**: *It rained a long time*. Here the nominal used adverbially simply designates a span of time that is longer than the norm (n) with respect to the scale of comparison. In **(f)**, *It rained for days*, the adverbial expression is also non-metric in that no specific length is indicated. While days are invoked as units of measurement, as in **(d)**, the failure to specify their number leaves the expression quite vague. It does however tell us that the time span is measured in days (as opposed to

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[5] Cf. (8): *Every student was surprised.*

[6] Thus *It rained every day* suggests multiple episodes of raining, whereas *It rained day after day* suggests a single, more or less continuous episode.

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minutes, hours, weeks, or months), and further suggests that the duration is rather long. Of the various kinds of temporal adverbs just described, this is the one that most closely resembles *day after day*.

One difference between the two constructions is that *day after day* lacks an explicit relational element comparable to *for*. Rather than being coded morphologically, the relationship between time span and event emerges as an aspect of constructional meaning, in the manner of **Figure 10(b)**. Another difference is that *day after day* indicates the multiplicity of days iconically, through partial enumeration, rather than through pluralization. Naturally more evident in longer sequences (with more iterations of *after day*), this iconicity has semantic consequences. Through repetition of the temporal unit, the construction effects a partial simulation of the experience associated with the profiled event. Instead of just describing the event's duration, to some extent—in the attenuated manner of simulations—it recreates the experience of time passing and the monotony engendered by extended occurrences. I regard this as a conventional aspect of its meaning.

3.2. SERIAL CONSTRUCTIONS. This iconicity is the key to understanding the *day after day* construction. The repetition of temporal units to reflect the passage of time is most congruent with a basically linear organization, where links can be added to form a chain of any length. To be sure, a sequence of any length can be constructed under standard assumptions of grammatical constituency, as seen in (12)a: it is just a matter of a noun being modified by a prepositional phrase, where the prepositional object is itself modified by a prepositional phrase, and so on. However, there is absolutely no evidence—semantic, grammatical, or intonational—for this hierarchical structure. Intonation suggests the flat, chain-like organization in (12)b. And in fact, a serial structure of this sort proves to be quite adequate from standpoint of both meaning and grammar. There is no reason not to posit a chain-like succession of semantically and grammatically parallel intonational units, where the succession of units mirrors the succession of days.

(12) a. *(day (after (day (after (day (after (day (after (day)))))))))*
b. *((day) (after day) (after day) (after day) (after day))*

A considerable range of expressions lend themselves to this type of analysis. Exemplified in (13), they are based on a variety of other constructions, involving predicate nominatives, complementation, relative clauses, path prepositions, non-path prepositions, and coordination. They are not however reducible to these constructions. Indeed, they share a number of properties which would seem to indicate that they all instantiate a general pattern supervenient on the basic constructions. First, they all involve a series—of any length—consisting of elements that are either identical or structurally analogous. Second, they all follow the same intonational scheme, in which a series of equally prominent prosodic groupings are separated by slight pauses, but are nonetheless connected by suspended (as opposed to falling) intonation. Finally, they all exhibit iconicity. Here there are two general options (not mutually exclusive). On the one hand, the series can represent a natural path of mental access: a path through space, time, successively embedded mental spaces, a chain of

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connected individuals, or a hierarchy of whole-part relationships. On the other hand, the number of elements can be used iconically for conveying magnitude (especially in cases of repetition).

(13) a. *A lie / is a lie / is a lie / is a lie / is a lie.*
b. *Amy says / Bob thinks / Chris knows / Doris left.*
c. *I know a man / who has a friend / who met someone / who works for Barack Obama.*
d. *She flew from San Diego / to Dallas / to Chicago / to Cleveland / to Buffalo.*
e. *Your keys are in my study / in the desk / in the top drawer / near the back.*
f. *The sculpture is just a line / of clusters / of rows / of stacks / of plates.*
g. *He ran / and ran / and ran / and ran / and ran / and ran / and ran.*
h. *It happened again / and again / and again / and again / and again.*
i. *For Christmas I want an iMac / and an iPod / and an iPhone / and a new Mercedes.*

It is not claimed that these constructions are analogous in all respects, nor are they analyzed here in any detail. I will simply note that, internally, the members of each series are locally connected and accessed in separate windows, thus presenting a succession of profiles, as was shown for (13)b in **Figure 9(a)**. In (13)c, for instance, each relative clause connects with the previous noun and profiles a process in which its referent participates. But there is no reason to posit a classical constituent subsuming all their content and having a single overall profile—it would seem quite unreasonable to claim that the entire sequence *who has a friend / who met someone / who works for Barack Obama* profiles just the *have* relationship. This is not to deny that the entire series might serve a collective function, and might even be a constituent in a broad sense of the term. Collectively, for instance, the locatives in (13) e do serve to locate the keys, and this itself effects their conceptual grouping. They are also contiguous in the linear sequence, so at least potentially they can be grouped phonologically on this basis.[7] But if these groupings are actually apprehended and related symbolically, they do not form a classical constituent as defined above. More is going on than can be captured in a single constituency hierarchy as classically conceived.

Coordinate structures fit neatly into this general scheme. The hallmark of coordination is that the conjuncts are equal in status and parallel in function. Moreover, a conjoined structure is analyzed in CG as having multiple, coexisting profiles rather than a single overall profile (Langacker 1991: §11.2). As shown abstractly in **Figure 12**, the conjuncts ($r_1$, $r_2$, $r_3$) collectively fill a role (R) within a larger structure (Q) that is typically filled by a single element. And despite their common function and equal prominence, the conjuncts are necessarily accessed sequentially in separate windows (>), especially when *and* is repeated (*X / and Y / and Z*).

Let us consider in more detail how conjoined structures are put together. In **Figure 13(a)**, I sketch a symbolic assembly representing nominal expressions of the form *X / and Y / and Z*. Each symbolic component profiles a thing (given as a circle). The second two components reflect the incorporation of *and* at a lower level of organization (not shown). The

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[7] This grouping would, however, cross-cut the one based on prosody.

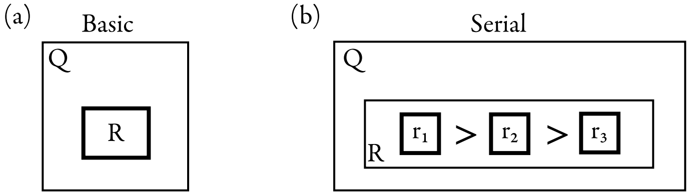

***Figure 12.*** *Coordination as a serial construction.*

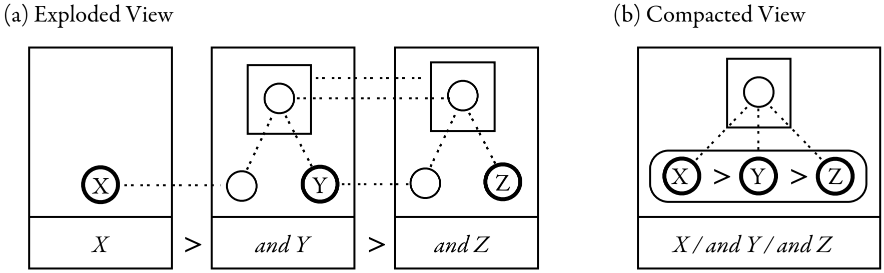

***Figure 13.*** *Formation of a coordinate expression.*

semantic effect of *and* is simply to portray the profiled thing (Y or Z) as one of two things each of which fills the same role (circle) in a larger structure (rectangle). The three symbolic structures are locally connected by means of the correspondences indicated: X is identified as the thing that fills the same role as Y, and Y as the thing filling the same role as Z. Given the CG characterization of coordination, it is not presumed that these connections give rise to an overarching composite symbolic structure—at least none where all three conjuncts are viewed in a single window with a single profile. Instead they are accessed serially, in separate windows with separate profiles.

So analyzed, *X / and Y / and Z* is not a classical constituent. It is however a constituent in a somewhat broader sense, since collectively the assembly does fill a single role in a larger structure. For purposes of describing this higher-level structure it is therefore helpful to have a notation which shows it as a single element (despite its serial nature). To this end I employ the notational variant in **Figure 13(b)**. It is not to be understood as a composite structure distinct from **13(a)**, but merely a compact way of representing it. The wedges still indicate that X, Y, and Z are accessed in separate windows, delimited intonationally by slight pauses (/). Correspondences now show more directly that they all fill the same role in a larger assembly. One feature I have added is a box with rounded corners. The intent is to make explicit an inherent aspect of the expression's overall meaning: the very fact of conceiving X, Y, and Z as filling the same role serves (at least implicitly) to effect their conceptual grouping.

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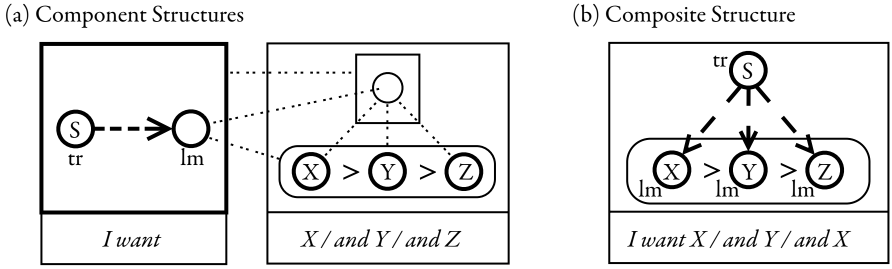

***Figure 14.*** *Integration of a coordinate expression in a larger structure.*

In **Figure 14**, I indicate how these serially accessed structures collectively fill a single role in a larger structure—specifically, they all instantiate the landmark of *want*.[8] Correspondences identify the landmark with the role filled by all the conjuncts (a **functional** characterization), and also with the implicit group comprising X, Y, and Z (a **referential** characterization). A further correspondence equates the larger structure containing the role with the clausal component *I want*. Given these correspondences as well as the sequentiality of the coordinate structure, the composite structure is as shown in diagram **(b)**. Its import is that multiple referents are viewed successively as serving the landmark function.

3.3 TEMPORAL ICONICITY. Another relevant topic is temporal iconicity. Here we need only distinguish two basic kinds—I will call them **simple** and **representative** iconicity. Sentence (14)a exemplifies the former. It is just a matter of describing events in the order of their occurrence. In **Figure 15(a)**, bars represent events that occur successively through time (t). As before, wedges (>) indicate that these events are accessed serially—through speech time—in separate windows of attention. The sequence of events is congruent with the sequence of description. Iconicity of this sort amounts to a simulation of the sequentiality inherent in complex occurrences.

(14) a. *She heard a noise / and turned around / and saw a bear.*
b. *He complained / and complained / and complained.*
c. *All morning he complained.*
d. *Every five minutes he complained.*

While it also involves simulation, representative iconicity is more complex. Example (14)b does mean that there were multiple, sequenced instances of complaining. It does not however indicate that only three such instances occurred. Rather, it implies that there were

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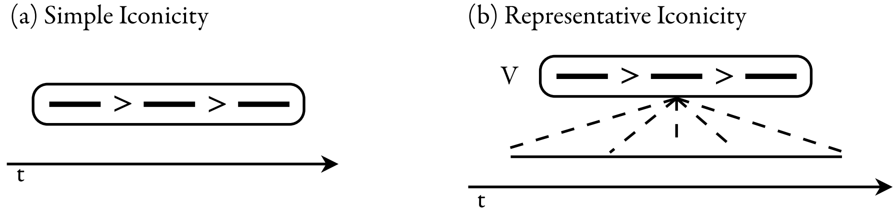
[8] The constituency in diagram (a)—with *I want* and *X / and Y / and Z* as component structures—is adopted just as a matter of convenience. I would actually posit an assembly with the chain-like organization suggested by the intonational groupings: *((I want X) (and Y) (and Z))*. The flexibility of symbolic assemblies allows this to coexist with the grouping *((X) (and Y) (and Z))*, which cross-cuts it. The distinctive properties of coordination are examined in Langacker (2009: ch. 12).


(a) Simple Iconicity

(b) Representative Iconicity

***Figure 15.** Types of temporal iconicity.*

many such instances, too many for exhaustive enumeration. Sentence (14)c is thus a natural continuation of (14)b. It follows that the profiled events are not actual instances of complaining, but are merely representative of those which actually occurred. Hence they are virtual entities, invoked as a kind of generalization over the actual events. The expression is nonetheless iconic: through a partial simulation, it suggests the repetitive and extended nature of the reported experience. This experience is shown as a line in **Figure 15(b)**. The dashes indicate that the virtual profiled events project to any portion of this experience, i.e. the occurrence of multiple instances of complaining characterized any substantial segment of the overall episode. This is quite analogous to the representativeness achieved by *every*, as in **Figure 11(b)**. For this reason, a sentence like (14)d—employing *every*—is another natural continuation of (14)b.

4. THE CONSTRUCTION. We are now ready to confront the *day after day* construction. Clearly it belongs to the family of serial constructions exemplified in (13). It is also a case of representative temporal iconicity, as in (14)b. This is so despite the grammatical differences: it uses nouns instead of verbs, and a preposition instead of a conjunction. As a consequence, *day after day after day* functions adverbially, whereas *complained and complained and complained* is a complex clausal predicate. There is nonetheless an evident formal similarity. Moreover, they share the abstract property of invoking a series of fictive entities in order to represent a longer series of actual ones—thereby achieving a **conceptual compression** (Fauconnier & Turner 2002)—as well as to simulate an extended experience of time passing.

These similarities are at least as consequential as those observed in (15), where *after* is used in both expressions, and the series of *after* phrases can in each case be extended indefinitely. But the list of differences is longer and more impressive. First, in (15)a we find full nominals (noun phrases), in contrast to the simple (ungrounded) nouns in (15)b. Second, the nominals in (15)a are distinct, whereas in (15)b the same noun is repeated throughout. Third, the *after* phrases in (15)a serve to specify temporal location, while in (15)b they indicate duration. This third difference correlates with the previous two. Only full, grounded nominals (like *the party*) allow the specification of a particular location. On the other hand, repetition of a simple noun like *day* allows the simulation of extended duration: *day* designates a unit of temporal duration; in the absence of grounding, the days mentioned are virtual entities (rather than actual instances), which makes them suitable for simulation; and repetition iconically conveys the magnitude of the event's duration.

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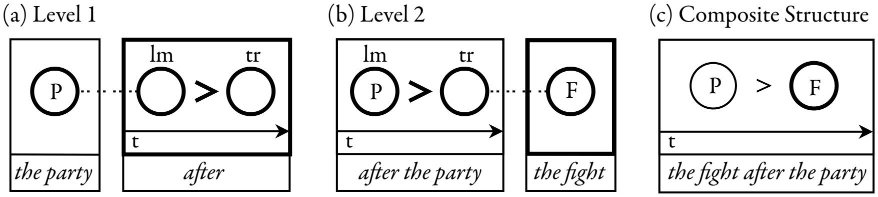

***Figure 16.*** *Canonical prepositional phrase constructions.*

(15) a. *the fight*$_4$ / *after the party*$_3$ / *after the reception*$_2$ / *after his wedding*$_1$
b. *day*$_1$ / *after day*$_2$ / *after day*$_3$ / *after day*$_4$

Further differences can be noted. In (15)a, events are described in reverse order from their sequence of occurrence, as specified by subscripts—e.g. the fight is mentioned first but is the last event to occur. By contrast, the days in (15)b are mentioned in iconic sequence; each is interpreted as extending the period of time already indicated. This difference is a consequence of still another, pertaining to the grammatical construction serving to integrate *after* with the following nominal element. In (15)a, we observe the same, canonical constructions as in **Figure 7**, *a woman from Brazil*: the general patterns for combining a preposition and a nominal to form a prepositional phrase, and for using a prepositional phrase to modify a noun. Despite their superficial parallelism, expressions like (15)b are put together very differently. The constructions involved turn out to be fairly similar to those which figure in coordination.

For sake of comparison, let us start with the general patterns. Depicted in **Figure 16** is their application in forming the complex nominal *the fight after the party*. There are two levels of composition (ignoring articles). At level 1, the preposition *after*—which profiles a relationship of temporal succession (>)—combines with *the party* through a correspondence between the nominal profile and the preposition's landmark. The resulting composite structure, *after the party*, functions in turn as a component structure at level 2. Here the schematic trajector of the prepositional phrase is put in correspondence with the thing profiled by *the fight*, which functions as profile determinant at this level. As a consequence, the expression as a whole (the composite structure at the highest level of organization) designates the fight.

Each construction specifies the temporal sequencing of component elements at the composite structure level. The prepositional phrase construction specifies that the preposition directly precedes its object. The higher-level construction specifies that a prepositional phrase follows the noun it modifies. Together with the meaning of *after*, the latter specification is responsible for the order of events running counter to the order of expression in (15) a. *After* locates its trajector in relation to an earlier event (its landmark). In the modifying construction, the trajector is identified with the head noun's profile. And since the construction also specifies that the head noun precedes the prepositional phrase, the later event is mentioned prior to the landmark event serving to locate it.

The *day after day* construction is very different. A point worth emphasizing is that *day* and *after* have the same semantic value that they do in other uses. The special character of

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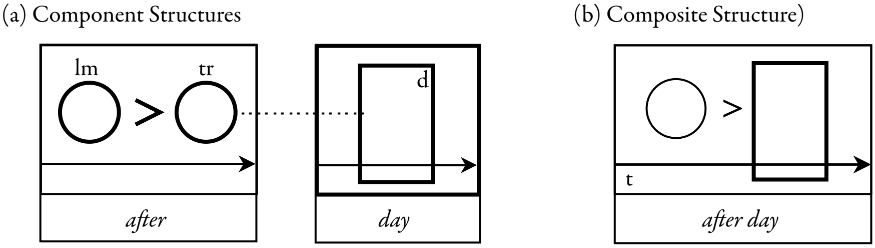

***Figure 17.*** *A non-canonical prepositional construction.*

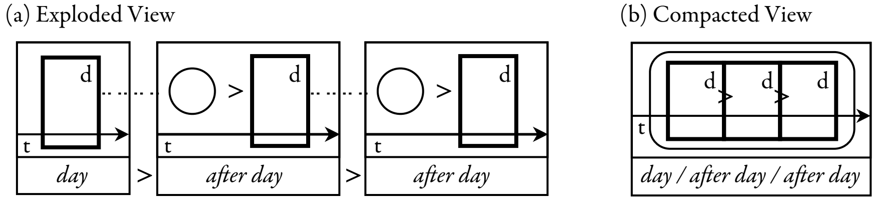

***Figure 18.*** *Formation of a serial adverbial expression.*

*day after day* is a matter of constructional meaning: it stems from how the components are integrated and how the resulting expression is profiled.

A key descriptive claim is that *day after day after day* represents a serial construction that successively profiles a sequence of days, each in its own window of attention. It is through this partial enumeration of temporal units that the passage of time is simulated and its extended duration iconically conveyed. So in contrast to prepositional phrases like *after the party*, each iteration of *after day* should profile the day rather than the *after* relationship. For this reason *day* functions as the profile determinant in its combination with *after*, as shown in **Figure 17(a)**.[9] Moreover, each iteration of *after day* serves iconically to lengthen the span of time already introduced by adding one more day to the sequential enumeration. For this reason the profile of *day* corresponds to the trajector of *after* (the successor in the profiled relationship) rather than to its landmark. The resulting composite structure, shown in **Figure 17(b)**, designates a day characterized as the temporal successor to some other entity.

At the second level of organization, instances of *after day* are strung together following *day* on the basis of local connections, as shown in **Figure 18(a)**. This chain-like organization is directly analogous to the one in **Figure 13(a)**, the coordinate structure *X / and Y / and Z*, except that *after* is less abstract than *and*, having specific temporal import. The chaining is effected by correspondences equating each day mentioned with the schematic entity to which the next day mentioned is the successor. As in **Figure 13**, these connections

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[9] As defined in CG, therefore, *after* modifies *day*, whereas in **Figure 16** *the party* is a complement of *after*.

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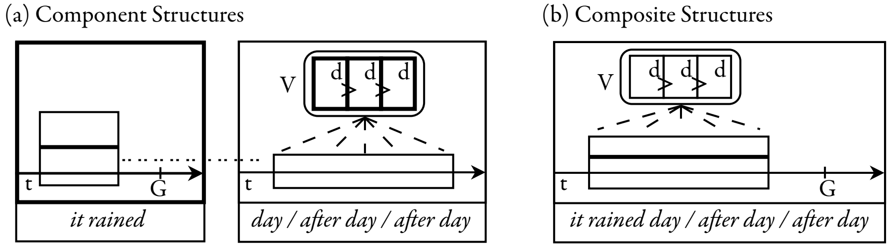

***Figure 19.*** *The adverbial construction.*

implicitly serve to group the profiled elements as a higher-order thing, in this case a span of time. And as before, the profiled elements are accessed sequentially, in separate windows, rather than being viewed simultaneously with a single overall profile. So although the components form a kind of constituent, which functions as a whole for higher-level purposes, it is not a classical constituent representing a single instance of some category. It is not a single noun, but a series of nouns.

As a final task, we need to examine how *day after day after day* combines with the remainder of a clause in which it functions adverbially. The construction is sketched in **Figure 19**. The first thing to notice is that—concomitant with simulation and the absence of grounding—the expression designates a series of days that is only virtual. It can therefore serve the purpose of representative temporal iconicity, simulating the extended, monotonous nature of experience during some actual span of time. The days mentioned are thus construed as projecting to any portion of an actual time span, depicted in **19(a)** as a rectangle along the time arrow.[10]

This time span provides the basis for integrating *day after day after day* with the remainder of the clause, which specifies the occurrence it pertains to. By its very nature, a clause follows a profiled relationship in its evolution through time. The integration of *day after day after day* with an expression like *it rained* is thus effected by means of a correspondence that identifies the time span it evokes with the one defined by the clausal process. Since the clausal component functions as profile determinant, the composite expression designates an instance of raining prior to the speech event (G). It further indicates that the raining endured for numerous days, and that the simulated durational experience was associated with arbitrary portions of the profiled occurrence. In this manner *day after day after day* is able to serve a function traditionally regarded as adverbial, despite its nominal character (as determined by its complex profile).

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[10] In contrast to expressions with every, this representativeness is not explicitly coded, any more than it is in (14)b, *He complained and complained and complained*, or in generics, e.g., *A tiger has stripes* (Langacker 1999a: ch. 8). Such expressions are apprehended in relation to particular mental constructions, which have to be regarded as part of the expressions' linguistic meaning despite their implicit nature. There is nothing really special or problematic about this—an expression's meaning is always supported by a tacit **conceptual substrate** from which it cannot be neatly separated (Langacker 2008a: §13.2)

By way of conclusion, I would like to emphasize that the *day after day* construction conforms to broader patterns of English grammar and that its characterization in CG does not require any theoretical or descriptive notions that are not independently established. While it may be non-canonical, it fails to show the autonomy of syntax vis-à-vis semantics. I have in fact described the *day by day* construction—hopefully with some success—in a framework that explicitly rejects the autonomy thesis, positing only semantic structures, phonological structures, and symbolic links between them. The key is to recognize that canonical structures are quite limited relative to the actual variety of symbolic assemblies.

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# NOUN PHRASES WITHOUT NOUNS IN SIDAAMA (SIDAMO)

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**Abstract:** This study examines noun phrases without nouns in Sidaama (Sidamo), a Cushitic language of Ethiopia. This language has two types of noun phrases without nouns. One type could be analyzed as involving ellipsis of the head noun, thus might not invalidate the notion of head in noun phrases. However, as for the other type of noun phrase without a noun, which is formed with a clitic, it is questionable whether the notion of head should be posited.

**Keywords:** head, noun phrases, Sidaama (Sidamo)

**Languages:** English, Sidaama (Sidamo), Indo-European, Cushitic

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1. THE NOTION OF HEAD IN NOUN PHRASES. The head of a phrase is usually considered to be that component which determines the syntactic properties of the phrase. For example, the head of a noun phrase is normally regarded as a noun. Since the development of X-bar theory in the 1970s, it has often been assumed that the constituent of a phrasal category is a projection of the lexical category of its head (for example, a noun phrase is a maximal projection of the lexical category Noun), and that the head is obligatory in a phrase. Since the 1980s, there have been issues involving the notion of head, particularly, how to define head (e.g., Zwicky 1985, Hudson 1987), what the head of a constituent is (e.g., Muysken 1982, Hudson 1984), and whether a head exists in a particular type of constituent (e.g., Hawkins 1993). In fact, Dryer (2004) argues that all noun phrases are headless.

Dryer (2004) examines noun phrases without nouns in various languages, and questions the notion of head in a noun phrase.[1] Noun phrases without nouns are "noun phrases that do not contain a noun or pronoun, but only words that otherwise occur as modifiers of nouns" (Dryer 2004:43); to put it another way, they are "noun phrases lacking a noun which denotes the kind of thing that the referent of the noun phrase belongs to, in other words, a noun that would generally be considered the head of the noun phrase rather than as a modifier' (Dryer 2004:47) (for example, English *four* in *I want [these] four* or *John's* in *I saw John's*). Many languages have such noun phrases. Dryer compares the hypotheses about the notion of head in noun phrases without nouns in (1), and concludes that hypothesis

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[1] As Dryer (2004) points out, the term 'noun phrase' is misleading because it might give nouns a privileged status. The present study also uses this term only because there is no other term that could replace it.

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(1)f, namely, that the notion of head does not apply to noun phrases in general and all noun phrases are headless, is more convincing in most cases than any other hypothesis in (1).

(1) a. Noun phrases without nouns involve ellipsis of nouns. (The speaker can provide the ellipted noun.)
b. In noun phrases without nouns, the apparent modifiers are actually nouns. (They contain nouns, which are their heads.)
c. Noun phrases without nouns do not contain nouns, but one of the modifiers is the head of the noun phrase. (They do not contain nouns, but have a head.)
d. So-called noun phrases are determiner phrases, whose head is the determiner, not the noun. (Hudson 1984)
e. Noun phrases without nouns are headless, unlike noun phrases with nouns, which are headed.
f. All noun phrases (not only noun phrases without nouns but also noun phrases with nouns) are headless.

According to Dryer, the hypotheses in (1)a–e have problems such as in (2)a–e, respectively (only one problem is listed for each hypothesis; see Dryer 2004 for more problems), and are not convincing.

(2) a. Although (1)a may be plausible in some cases, it is not always the case that the speaker has to be able to provide an appropriate noun. There are cases where noun phrases without nouns are used even when the speaker cannot provide an appropriate noun (English *those* in *I want those*, which may be said when the speaker talks in the darkness about the referents, which s/he cannot identify).
b. (1)b cannot show why it is incorrect to say that nouns do not exist in noun phrases without nouns.
c. 1(c) would violate the notion of head. It would be problematic to attempt to apply this hypothesis more generally.
d. 1(d) is not attractive for languages lacking definite or indefinite articles.
e. 1(e) would violate the obligatoriness of heads.

Dryer argues that unlike (1)a–e), (1)f is applicable to languages where noun phrases may or may not contain nouns, as well as to languages where noun phrases have to contain nouns. He argues that nouns occur the most frequently in noun phrases, because noun phrases tend to refer to particular things in the world, and nouns have advantages over other parts of speech in performing this task – they often have rich meaning and express a permanent rather than temporary property, and the kinds that they denote are likely to remain in memory and become part of a classificatory system. In languages where noun phrases have to contain nouns, the high frequency pattern is grammaticalized. Therefore, he concludes, in order to explain the high frequency of nouns in noun phrases, the notion of head does not need to be posited.

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Dryer states that there are two types of cases where noun phrases without nouns can be used. One is cases where the speaker does not know what kind of thing the referent of the noun phrase is. The other type is cases where it is so obvious to the hearer what kind of thing the referent of the noun phrase is that the speaker does not need to mention it. According to Dryer, the hypothesis in (1)f (that noun phrases are always headless) applies to the former type of cases, whereas the ellipsis hypothesis in (1)a is plausible in the latter type of cases. As shown below, in Sidaama, which has two types of noun phrases without nouns, they are both used only for the latter type of cases, but (1)a can apply only to one of them, and does not apply to the other type, for which (1)f is appropriate.

2. NOUN PHRASES WITHOUT NOUNS IN SIDAAMA (SIDAMO). Sidaama belongs to the Highland-East branch of the Cushitic language family (Kawachi 2007a, 2007b, 2008, in press a, b, c). It is spoken in the Sidaama Zone, whose capital, Awaasa, is located 273 km south of Addis Ababa. According to the 1994 Ethiopian Census, the population of the Sidaama people was about 1.8 million, but many Sidaama people consider their current population to be at least four or five million.

The case system of this language is accusative. Its word order is predominantly SOV. Noun phrases can make case distinctions with a suffix and/or a suprafix (high pitch on the final vowel segment), and make number and gender distinctions with suffixes. Noun phrases with nouns are sensitive to whether the noun is accompanied by a modifier/modifiers or by the possessive pronominal suffix or by neither, and make several grammatical distinctions (e.g., allomorphs of a case suffix) in terms of this criterion (Kawachi & Tekleselassie in press). The order of the constituents in a noun phrase with a noun is normally: adnominal demonstrative – numeral – adjective – genitive noun phrase – relative clause – noun, as in (3).[2]

| | | | |
|---|---|---|---|
| (3) | *hakku/hakkuri* | *lam-u* | *kolid-d-u* |
| | that.M.NOM/that.M.PL.NOM | two-NOM.M | black-PL-NOM.M |

| | | | |
|---|---|---|---|
| *dangur-í* | *ise* | *la'-'-ino* | *hand-i* |
| Dangura-GEN.PROP.M | 3SG.F.NOM | see-3SG.F-PEEF.3 | oxen-NOM.M.MOD |

*ba'-ø-ino.*
disappear-3SG.M-PERF.3
'Those two black oxen of Dagura that she saw disappeared.'

The adjective agrees with the noun phrase in case, number, and gender, and the numeral and adnominal demonstrative each agree with the noun phrase in case and gender (the adnominal demonstrative, whose optionally used plural form may or may not exist, depending on the combinations of gender, case, and deictic information, sometimes shows a number agreement as well, as in (3) with the plural form *hakkuri*). A relative clause is formed by means of gapping or pronominal retention. In (3), the direct object *hando* 'oxen' is relativized by means of the gapping strategy to form the relative clause *ise la'-'-ino*.

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[2] Abbreviations. EP: Epenthesis, MOD: modified by a modifier/modifiers and/or accompanied by the possessive pronominal suffix

Sidaama has two types of noun phrases without nouns. One type is made up only of an adjective or a numeral, as in (4) and (5), where the adjective or the numeral agrees in case, number, and gender with the referent of the noun phrase.[3] Such noun phrases without nouns are used only when the kind of the referent of the noun phrase is so obvious to the hearer that the noun does not need to be used. They cannot be used when the speaker cannot provide an appropriate noun that denotes the kind of the referent. In such a case, a noun phrase where *riččo* 'thing'/*re* 'things' or *mančo* 'person'/*manna* 'people' follows the modifier has to be used.

(4) { a. *ǰawaaššó* thin.ACC / b. *lamé* two.ACC }
*ise* *af-f-ino.*
3SG.F.NOM get-3SG.F-PERF.3

'She has (a) a thin one/(b) two.' (lit., 'She got (a) thin/(b) two.')

(5) { a. *busul-u* smart-NOM.M / b. *sas-u* three-NOM.M }
*da-ø-ino.*
come-3SG.M-PERF.3

'(a) The smart one (MASC)/(b) The three (MASC) came.' (lit., '(a) Smart (MASC) / (b) Three (MASC) came.')

Since a noun that would be modified by such a modifier constituent could always be provided[4], this type of noun phrase without a noun seems capable of analysis in terms of ellipsis of the head noun, as stated in hypothesis (1a), and does not seem to invalidate the notion of head in noun phrases.

The other type of noun phrase without a noun, which is the main concern of the rest of the present study, is formed with a clitic (a noun-phrase clitic, henceforth NPC). This NPC starts with *t* (FEM) or *h* (MASC), and seems to originate from the Afro-Asiatic demonstrative containing *t* (FEM) or *k* (MASC) (G. Hudson 1976).[5] The Sidaama NPC shows the forms

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[3] The adjectives in (4)a and (5)a, *ǰawaaššo* 'thin' and *busule* 'smart', are both singular.

[4] Examples are shown below:
(4) a'. *ise ǰawaaššó saa af-f-ino.* 'She has a thin cow.'
(5) a'. *sas-u wosin-i da-ø-ino.* 'The three guests came.'

[5] The contrast between *t* (FEM) and *k* (MASC) still exists in the demonstrative system in Sidaama, where the adnominal and nominal demonstratives could be analyzed as containing the forms of the NPC for the corresponding gender and case (e.g., *tini* (FEM.NOM) vs. *kuni* (MASC.NOM) 'this', *hatti* (FEM.NOM) vs. *hakku* (MASC.NOM) 'that (spatial: close to the hearer, non-spatial: already mentioned)').

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| Gender | Syntactic Role/Case | |
|---|---|---|
| | FEM | MASC |
| PRED | *=te* | *=ho* |
| | *=ti* | |
| NOM | *=ti* | *=hu* |
| GEN | *=te* | *=hu* |
| ACC | *=ta* | *=ha* |

***Table 1.*** *Forms of the Sidaama NPC with* t *(FEM)/*h *(MASC).*

in **Table 1**, depending on the gender of the referent of the noun phrase and the syntactic role or case of the noun phrase.[6] The predicate forms *=te* (FEM)*/=ho* (MASC) are attached to an adjective, to a common noun accompanied by neither a modifier nor the possessive pronominal suffix, or to a genitive noun phrase (see one of the uses of the NPC in (ii) below), whereas the predicate form *=ti* is used when attaching to a common noun with a modifier/modifiers and/or the possessive pronominal suffix, a proper noun, or the predicate form of a pronoun.

The six main uses of the NPC are shown in (i)–(vi), which are illustrated with (6)–(14).

(i) The NPC attaches to the end of the predicate form of an adjective phrase or noun phrase to form a predicate.

(6) *tii'i* *mančo*
that.F.NOM person.NOM.F
a. *danča=te.*
good=NPC.F.PRED
b. *t'agisaančo=te.*
healer=NPC.F.PRED
c. *danča t'agisaančo=ti*
good healer=NPC.MOD.PRED
d. *rodo-si=ti.*
sibling-3SG.M.POSS=NPC.MOD.PRED

'That woman (a) is good/(b) is a healer/(c) is a good healer/(d) is his sister.'

(ii) The NPC attaches to the end of a genitive noun phrase or a relative clause to form a predicate.

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[6] Some of the forms of the NPC are identical to allomorphs of the some of the case suffixes. The predicate forms of the NPC used with one set of types of constituents, *=te* (FEM)/*=ho* (MASC), are the same as the allomorphs of the dative-locative case suffix for a common noun accompanied by neither a modifier nor the possessive pronominal suffix, *-te* (FEM)/*-ho* (MASC). The feminine genitive form of the NPC is the same as the allomorph of the genitive case suffix for a feminine common noun accompanied by neither a modifier nor the possessive pronominal suffix, *-te* (that for a masculine one is not *-hu* but *-u*).

(7)
*tii'i* *saa*
that.F.NOM COW.NOM.F
a. *isí=te.*
3SG.M.GEN=NPC.F.PRED
b. *ise* *t'ur-t-ino=te.*
3SG.F.NOM milk-3SG.F-PERF.3=NPC.F.PRED

'That cow (a) is his (FEM)/(b) is the one (FEM) that she milked.'

(iii) The NPC attaches to the end of a genitive noun phrase or a relative clause to form a noun phrase without a noun.

(8)
a. *isí=ti*
3SG.M.GEN=NPC.F.NOM
b. *ise* *t'ur-t-ino=ti*
3SG.F.NOM milk-3SG.F-PERF.3=NPC.F.NOM
*ba'-'-ino.*
disappear-3SG.F-PERF.3

'(a) His (FEM)/(b) The one (FEM) that she milked disappeared.'

(9)
*ani*
1SG.NOM
a. *ku'uí* *beett-í=ta*
that.M.GEN child-GEN.M.MOD=NPC.F.ACC
b. *ise* *hiikk'-i-t-ino=ta*
3SG.F.NOM break-EP-3SG.F-PERF.3=NPC.F.ACC
*seekk-o-mm-o.*
repair-PERF.1-1SG-M

'I (MASC) repaired (a) that boy's (FEM)/(b) the one (FEM) that she broke.'

(iv) The NPC attaches to the end of a genitive noun phrase or a relative clause when there is another modifier immediately before the noun modified by the genitive noun phrase or the relative clause.[7]

(10)
a. *danɡur-í=ti*
Dangura-GEN.PROP.M=NPC.F.NOM
b. *ɗiw-an-t-ino=ti*
cause.sickness-PASS-3SG.F-PERF.3=NPC.F.NOM
*ǰawaaššo* *saa*
thin.NOM.F COW.NOM.F
*re-t-ino.*
die-3SG.F-PERF.3

'The thin cow (a) of Dangura/(b) that got sick died.'

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[7] The NPC does not occur when constituents in a noun phrase follow the normal order mentioned earlier: adnominal demonstrative – numeral – adjective – genitive noun phrase – relative clause – noun (e.g. *ǰawaaššo dan*ɡ*ur-í saa re-t-ino*. instead of (10)a; *lame isí* ɗ*iw-an-t-ino saada re-t-ino*. instead of (11)). There does not seem to be any difference in meaning between these two types of constructions, but it remains to be investigated whether they exhibit any difference in discourse.

(11)

| | |
|---|---|
| *isí=ti* | ɗ*iw-an-t-ino=ti* |
| 3SG.M.GEN=NPC.F.NOM | cause.sickness-PASS-3SG.F-PERF.3=NPC.F.NOM |

| | | |
|---|---|---|
| *lame* | *saada* | *re-t-ino.* |
| TWO.NOM.F | COWS.NOM.F | die-3SG.F-PERF.3 |

'His two cows that got sick died.'

(v) The NPC forms a complement clause as a complementizer.

(12)

| | | |
|---|---|---|
| *ise* | *dan*ɡ*ur-i* | *da-ø-ino=ta* |
| 3SG.F.NOM | Dangura-NOM.M | come-3SG.M-PERF.3=NPC.F.ACC |

| |
|---|
| *af-f-ino.* |
| come.to.know-3SG.F-PERF.3 |

'She knows that Dangura came.' (lit. 'She came to know that Dangura came.')

(vi) The NPC forms the cleft construction: …=*hu* …=*ti*.

(13)

| | | | |
|---|---|---|---|
| *ise* | *t'ur-t-ino=hu* | *tenné* | *saa=ti.* |
| 3SG.F.NOM | milk-3SG.F-PERF.3=NPC.M.NOM | this.F.ACC | COW.ACC=NPC.MOD.PRED |

'It is this cow that she milked.'

(14)

| | |
|---|---|
| *ise* | *da*ɡ-ɡ-*ino=hu* |
| 3SG.F.NOM | come-3SG.F-PERF.3=NPC.M.NOM |

{ a. *dan*ɡ*ur-i-ra=ti.*
Dangura-GEN.PROP.M-DAT.PROP=NPC.MOD.PRED
b. *dod-d-a-nni=ti.*
run-3SG.F-INF-MANNER=NPC.MOD.PRED }

'(a) It is for Dangura/(b) It is by running that she came.'

Note that in (v), the NPC normally has the feminine accusative form =*ta*, and that in (vi), the pair of NPCs always take the forms …=*hu* …=*ti*: the masculine nominative form =*hu* for the subject, regardless of the gender of the clefted noun phrase or the noun (if there is one) included in the clefted adverbial, and one of the predicate forms =*ti* for the predicate.

The type of host to which the NPC attaches differs depending on its usage. In (i), the NPC attaches to the noun at the end of a noun phrase in the predicate or the adjective at the end of an adjective phrase in the predicate. In (ii), (iii), and (iv), the NPC attaches to the genitive noun at the end of a genitive noun phrase or the verb at the end of a relative clause. In (v), the NPC attaches to the verb at the end of a complement clause. In (vi), the NPC in the subject attaches to a relative clause, and the NPC in the predicate can attach to any type of constituent that is not the subject of the relative clause formed in the subject of the cleft construction.

The type of constituent formed with the NPC is usually a noun phrase, but may not always be a noun phrase. In (i) and (ii), when the NPC attaches to an adjective phrase, a noun phrase, a genitive noun phrase, or a relative clause to form a predicate, it is not clear whether the predicate is a noun phrase or a constituent of some other category. Also, when it is clearly an argument noun phrase that is formed with the NPC, the noun phrase may be a noun phrase without a noun, as in (iii), or a noun phrase with a noun, as in (iv). In (v), the NPC forms a complement clause, or a "noun clause" (Dryer 2007), which is usually the object of a verb such as the following and could be regarded as a type of noun phrase without a noun: *af-* 'to come to know that …', *kul-* 'to tell that …', *odeess-* 'to announce that …', *kiil-* 'to prophesy that …', *masaal-* 'to prophesy that …', *amman-* 'to believe/admit that …', *haak’i’r-* 'to dream that …', *kaad-* 'to deny that …', *k’att’ar-* 'to complain that …', *la’-* 'to check that …', *maččʼišš-* 'to hear that …', *k’aa*ɡ- 'to remember that …', *hab-* 'to forget that …', *bat’-* 'to like the fact that …', ɡ*ib-* 'to dislike the fact that …'.

When a noun phrase without a noun is formed with the NPC as in (iii), both the speaker and the hearer know its referent, and the speaker could provide a noun that denotes the kind of thing into which the referent is classified. Thus, the condition for the use of this type of noun phrase without a noun is the same as that for the use of the other type, namely, a noun phrase consisting only of an adjective or a numeral, which was exemplified in (4) and (5). (When the speaker cannot provide an appropriate noun that denotes the kind of the referent, a noun phrase where the adjective or numeral is followed by the noun for 'thing(s)' or 'person/people' has to be used.) Therefore, the two types of noun phrases without nouns in Sidaama are formed in different ways. One is formed only with an adjective or a numeral, and the other is made up of a genitive noun phrase or a relative clause and the NPC. Both types are used only when the speaker does not need to use a noun for the kind of referent, which s/he could provide.[8]

3. ANALYSIS AND DISCUSSION. This section deals mainly with noun phrases without nouns formed with the NPC as in usage (iii), namely, those argument noun phrases in which the NPC attaches to the end of a genitive noun phrase or a relative clause. The discussion considers whether the hypotheses in (1) are each applicable to such noun phrases.

First, hypothesis (1)a (the ellipsis hypothesis) does not apply to this type of noun phrase without a noun, because, although the speaker always has to be able to provide an appropriate noun, if the noun were actually provided for the noun phrase, the sentence would be ungrammatical (e.g., instead of (8)a **isí=ti saa ba’-’-ino.* [3SG.M.GEN=NPC.F.NOM cow.NOM.F disappear-3SG.F-PERF.3] to mean, 'His cow disappeared.'; correctly, *isí saa ba’-’-ino.*).

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[8] The adnominal and nominal demonstratives have different forms based on deictic information ('this', 'that (spatial: distant from the speaker and close to the hearer, non-spatial: already mentioned)', 'that (distant from both the speaker and the hearer)'), gender, and case, and share the same forms for most combinations of these. A noun phrase made only of the demonstrative form that the adnominal demonstrative shares with its corresponding nominal demonstrative (e.g. *hatti* 'that.F.NOM'/*hakku* 'that.M.NOM') could be regarded as a noun phrase without a noun, which seem to be similar to the type formed only with an adjective or a numeral in not requiring the NPC (additionally), although it already contains the NPC (e.g. *=ti* in *hatti*, *=hu* in *hakku*).

Hypothesis (1)b (that one of the apparent modifiers is actually a noun, and thus the head of such a noun phrase) does not work, either. A genitive noun phrase may consist of a noun, but the referent of the genitive noun phrase (possessor; e.g., 'that boy' in (9)a) is different from that of the noun phrase without a noun (possessum; e.g., '(that boy's) drum'). A relative clause may contain a noun or pronoun (e.g., the third-person singular feminine pronoun in (9)b), yet it is not a noun but a clause; also, the referent of the pronoun is different from that of the noun phrase without a noun (e.g., 'the drum that she broke').

Hypothesis (1)c (that one of the apparent modifiers is the head, though it is not a noun) is also problematic, because, if the head of a phrase is a constituent other than a noun (e.g. the verb of a relative clause or the relative clause itself), that phrase should not be a noun phrase.

Hypothesis (1)d (that the determiner is the head) is not convincing at all. First, this language has so-called determiners (adnominal demonstratives, quantifiers, genitive pronouns), but does not always use them. Second, the existence of a determiner cannot be posited when the NPC attaches to the end of a clause. Third, because the contexts where the NPC occurs are limited, the NPC itself cannot be considered to be a determiner.

Finally, hypothesis (1)e (that noun phrases without nouns are headless, unlike those with nouns, which are headed) is also unattractive. The NPC cannot be regarded as a marker of noun phrases without nouns. Adjectives and numerals form noun phrases without nouns by themselves, without the NPC. Moreover, as in (iv), the NPC can also be used to form noun phrases *with* nouns.

In support of (1)e, one may claim that in prototypical cases, noun phrases are headed and their heads are nouns, whereas in rare cases, where noun phrases do not contain nouns, they are headless. However, it remains to be explained why nouns have the privilege of being the heads of noun phrases in the former case, and why there are no heads in the latter case. Also, the assumption of the inherent necessity of head would need to be abandoned.

Unlike these hypotheses, hypothesis (1)f (that all noun phrases are headless) does not seem to have any problem. Like a noun phrase without a noun consisting only of an adjective or a numeral, a noun phrase without a noun consisting only of a genitive noun phrase or a relative clause is used only when the kind of the referent of the noun phrase is so obvious to the hearer that the speaker does not need to mention it. In such a case, the ellipsis hypothesis may usually be plausible, but in the case of Sidaama, it can apply to a noun phrase without a noun consisting only of an adjective or a numeral, but cannot apply to a noun phrase without a noun consisting only of a genitive noun phrase or a relative clause. For the latter type, (1)f is convincing. Therefore, if a general applicability to noun phrases with nouns as well as the two types of noun phrases without nouns in Sidaama is taken into account, (1)f seems to be the least problematic.

It is often the case that heads are described in association with the notion of modification. Heads are commonly contrasted with modifiers. However, the notion of head concerns a relationship between a phrasal category and its head, which is a mother-daughter relation. On the other hand, the notion of modification concerns a relationship between a modifier and a modified word, which is not a mother-daughter relation. The notion of modification can emerge as a grammatical distinction, though this notion might differ slightly from language to language. Morphosyntatic distinctions made in terms of whether or not a noun is modified (e.g., Ezafe construction in Iranian languages), or whether a noun is accompanied by a modifier/modifiers or by the possessive pronominal suffix or by both or neither (e.g., allomorphs of the case markers in Sidaama). On the other hand, the notion of head does not seem to provide a grammatical distinction. There does not seem to be any morphosyntactic phenomenon that shows that the head of a noun phrase (if any) is a noun.

4. CONCLUSION. The present study has shown that Dryer's hypothesis that all noun phrases are headless applies to noun phrases in Sidaama more fittingly than any other hypothesis. Even though noun phrases without nouns are used only when the speaker does not use a noun for the kind of the referent that is obvious to the hearer, the ellipsis hypothesis does not apply to one type of them. Unlike modification, the notion of head does not seem to emerge as a grammatical distinction.

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# A CORPUS ANALYSIS OF JAPANESE MIMETICS

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**Abstract:** Much of the research on Japanese mimetics relates to which part of speech the mimetic occurs as. However, no data based study exists to verify the frequency of which mimetics occur most often in which part of speech (grammatical category). This paper gives a brief overview of mimetics and then describe a preliminary study performed to investigate this issue. Various mimetics are analyzed using the data from the Kotonoha (*http://www.kotonoha.gr.jp*) and JpWaC (*http://corpus.leeds.ac.uk/*) Corpora to measure the overall occurrence of mimetic per parts of speech. The results are mixed but provide direction for further research.

**Keywords:** Mimetics, lexical iconicity, sound symbolism, Japanese, corpus

**Languages:** Japanese, English

PHONETIC OR SOUND SYMBOLISM has been a controversial topic in the field of linguistics. Sound symbolism, onomatopoeia, ideophones, lexical iconicity and mimetics are commonly considered fringe linguistic phenomenon, and thus traditionally left unexamined or ignored. The non-importance of this research area is so entrenched that Newmeyer can state "the number of pictorial, imitative, or onomatopoetic nonderived words in any language is vanishingly small" (1992:758). However, recent research shows that in many African, Asian and Native American languages, they are an integral component of the language.

One such language is Japanese. "Mimetics in Japanese are extremely productive and ubiquitous" (Tsujimura 2005a, 146), "are indispensable for enriching colloquial as well as literary expression in both spoken and written Japanese" (Baba 2003:1862), and "used very frequently in all levels of Japanese—from conversation to the quality newspaper" (Inose 2007:97). They are often considered "the most important part of any sentence and they greatly enhance its effectiveness" (Tsunoda 1978:158 quoted in Yang 1984:85). The effectiveness can be seen, since "when a mimetic is used, Japanese speakers have a more concrete idea of what … is being referred to" (Sugiyama 2005:302). For most Native speakers mimetics are not only "referential but also evoke a vivid at-the-scene feeling. Native speakers feel that hearing and reading these words are in some sense equivalent to sensory input or affect arousal" (Kita 1997:381). However, mimetics tend to defy attempts to classify and categorize them semantically (Millington 1993:11). While this causes some discussion as to the true nature of their meaning, the frequency of usage and apparent centrality of sentences when used make them an important area of research for Japanese linguistics.

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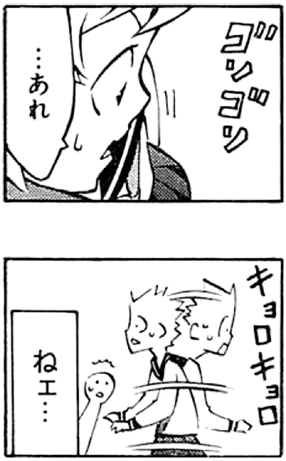
ゴソゴソ
…あれ
キョロキョロ
ねェ…

*gosogoso*
Mimetic – rustling/searching sound

*… are*
What …

*kyorokyoro*
Mimetic – to look around, spin

*Nee…*
It's gone …

***Figure 1.*** *Example from manga (Tsutsumi & Takemura 2008:51)*

Much as the English lexicon can be divided into separate strata (e.g. Latinate, Germanic, Scandinavian, etc), Japanese has four major lexical strata: native Japanese, Sino-Japanese, later borrowings (mainly from Portuguese, English and Dutch) and mimetics (Ido 1997:2; Tsujimura 2005a: 139). Cross-linguistically mimetic words (or words with sound symbolic properties) are often considered anomalous. "Given ample cross linguistic and language internal surveys, mimetics do exhibit different sets of properties, whether they be phonological, morphological, semantic, or syntactic, and Japanese mimetics certainly fit that profile" (Tsujimura & Deguchi 2007:341). Japanese mimetics are, thus, typically treated as a separate stratum in the lexicon.

This is a flexible stratum in the Japanese lexicon. The exact number of mimetic words in Japanese is unknown (Baba 2003:1862); various sources place the number around 1,600–1,700. Oda (2000:65) works with 1,630 mimetics which he compiled from various sources including dedicated dictionaries for mimetics, novels, Japanese textbooks, newspapers, magazines and so on (ibid:61–62); Toratani (2005:335) cites Atoda & Hoshino (1993) with 738 headwords and approximately 1,700 mimetics; Baba (2003:1862) cites Asano (1978) and Kakehi, et al. (1996) for about 1,600 mimetics. Key (1997:3) cites Ono (1984) for about 1,500 mimetics. Noma (1998:30) states that Japanese has second highest number following Korean with 2,000 words. Figuring out the exact count may be a purely academic exercise, for as Tsujimura (2005a:150) notes, the coinage of mimetics and mimetic verbs is very frequently observed. Still, this phenomenon is by no means unique to Japanese (Ido 1997:27) and is not as yet fully examined (Key 1997:93).

Japanese mimetics are not limited to imitating sounds or motions, but they also can "represent sounds, shapes, texture, or something more abstract such as feelings" (Tsujimura 2005a:137) as well as symbolizing "manners or psychological conditions" (Hamano 1998:2) as can be seen in **Figure 1**.

| Part of Speech | Sample Sentence |
|---|---|
| **Noun** | Kodomo-no seiseki-ga waruku **iraira**-ga tamatta.<br>Child.GEN grades.SUB bad irritation.SUB accumulated<br>'Since my child's grades have been bad, my irritation has accumulated.' |
| **Adverb** | Ano hito-wa itsumo **iraira**(-to) hanasu.<br>That person.TOP always irritation (mimetic marker) speak<br>'That person always speaks in an irritated manner.' |
| **Verb** | Otto-no kudaranai hanasi-ni **iraira** shita.<br>Husband.GEN silly talk.by irritation did<br>'I got irritated by my husband's silly talk.' |

***Table 1.** Various forms of* iraira *(Tsujimura 2005a:144, 2005b:374)*

The use of mimetics is common in everyday Japanese (Millington 1993:11–13), especially in manga (Japanese comics). The mimetic *gosogoso* is usually used to describe a rustling sound. Here the rustling noise is being made by the character searching an empty pocket. The mimetic *kyorokyoro* is used to emphasize and reinforce the drawing that, after discovering her pocket empty, the character is now frantically looking around.

There are many aspects of mimetics that have yet to be fully researched. Even though the existence of the mimetic stratum is widely recognized and research on it has been increasing in recent years, the research has on the whole been largely focused on the phonological properties of mimetics. Recent research has focused the translatability, semantics and morphology of mimetics. Of particular interest is the flexibility seen in the use of mimetics based on their unique sound symbolic phonology, as well as morphological and semantic properties. A mimetic can change which part of speech it occurs as. "A single mimetic word can appear as a noun, an adjective, an adverb, or a verb" (Tsujimura & Deguchi 2007:340). The favorite example of this phenomenon is *iraira*, as seen in **Table 1**.

However other mimetics can sometimes only appear as members of a single category. Examples of this include *seisei suru* 'to feel refreshed', *utouto suru* 'to doze', *sa'pari suru* 'to feel refreshed' (Tamori 1980:167) and *surasura na/no* 'smooth'. It is assumed by many scholars that most mimetic "words function essentially as adverbs" (Inose 2007:98). Some mimetics are even more interesting in that mimetic verbs seem to have different subcategorization requirements, as shown in **Table 2** (overleaf)**.**

The flexibility of the semantics of mimetics seems to be a core property, whether it is shifting between lexical categories or differing subcategorization requirements or whether it is extending to new contexts.

Various theories have been proposed to explain these properties. The most controversial of all relate to the semantics of mimetics. Kita (1997:2001) proposed that the mimetics do not work in normal analytic semantic space, but in an affecto-imagistic semantic space. Thus even though sentences with mimetics are syntactically unified, the mimetics are semantically differentiated. Tsujimura (2005a:145) strongly disagrees and takes a constructionalist approach arguing that "mimetic words lack distinctive categories and as a natural consequence, the semantic characteristics that are often associated with categories

| Verb type | Sample Sentence |
|---|---|
| **Inanimate Stative** | Doa-no totte-ga burabura suru.<br>Door.GEN knob.SUB swing/sway do<br>‘The door knob is loose.’ |
| **Animate Stative** | Tarō-ga uchi-de burabura shiteiru.<br>Tarō.SUB house.LOC swing/loaf is doing<br>‘Tarō is being lazy at home.’ |
| **Atelic** | Tarō-ga uchi-de burabura shiteiru.<br>Tarō.SUB house.LOC swing/loaf is doing<br>‘Tarō is being lazy at home.’ |
| **Causative** | Tarō-ga uchi-de burabura shiteiru.<br>Tarō.SUB house.LOC swing/loaf is doing<br>‘Tarō is being lazy at home.’ |

***Table 2.*** *Subcategorizations of* burabura *(Tsujimura 2005a:147, Tsujimura 2001:415).*

are missing as well”, and “the meaning of mimetic verbs cannot be found in the mimetic words themselves or not even from the mimetic verbs as a whole; rather, it is a property of the construction in which they appear” (2005a:150). Thus, mimetics are generally considered to be “symbolic or iconic” (Tsujimura 2005a:137).

Though semantic reasons for the uniqueness of mimetics abound, a common explanation is that “the flexibility of mimetics is probably due to their iconicity. Even if they are not used in their conventional sense, they still serve their function as long as the speaker/writer and the listener/reader can relate the sound (signifier) to what it describes (signified)” (Sugiyama 2005:307). This reliance on iconicity to explain mimetic phenomena causes some scholars, like Newmeyer (1992), to reject sound symbolism and mimesis outright.

1. SOUND SYMBOLISM, ONOMATOPOEIA, LEXICAL ICONICITY. Sound symbolism is the idea that the intrinsic qualities of sounds (phonemes) can affect the meaning of words where those sounds occur (Nuckolls 1999:226–227). This concept was first introduced by Sapir (1929) and has been debated ever since. While some scholars deny its existence in any form, many agree that is likely to be language specific (Marttila 2009:94), or in other words, the meanings that phonemes suggest vary across languages. It is also generally accepted that the degree to which a particular language employs sound symbolism also varies greatly (Ikegami and Zlatev 2007:223), e.g. English is generally considered to have little sound symbolism while other languages like Bantu or Quechua are rich in it.

Onomatopoeia is sometimes confused with sound symbolism. Though potentially related, however, these concepts are different. “In onomatopoeia, sound is imitated whereas in sound symbolism a connotation is attached to a phoneme or a string of phonemes without any obvious imitation, or various non-acoustic features are symbolized by acoustic means. Thus, imitation is not symbolic and symbolism is not mimicry” (Marttila 2009:49). So words that are onomatopoeic may be sound symbolic, but sound symbolic words are not necessarily onomatopoeia.

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Sound symbolism and onomatopoeia are also different in that onomatopoeia can be considered a global phenomenon and sound symbolism a local phenomenon. "Speakers of different languages hear the surrounding sounds in the same way and then reproduce the sound with phonemes belonging to the phonemic inventory of their language. The universality of onomatopoeia depends on whether speakers of different languages choose to create lexical items on the basis of sound imitation or not" (Marttila 2009:94). Thus, the differences in onomatopoeia are based on the phonemic inventory of a language and whether a word is created to imitate the original sound. For example, in Japanese a rooster's call is *kokekokkoo* and in English cock-a-doodle-do. Although the rooster's call has the same sound in both locales, it is imitated differently mainly due to differences in phonemic inventories. Thus, onomatopoeia is a global phenomenon constrained by local language factors; sound symbolism, on the other hand, is determined purely by local language factors and can be considered a local phenomenon, though it occurs universally.

Lexical iconicity is a more general phenomenon. It includes both sound symbolism and onomatopoeia. Thus, it is also a universal phenomenon but again takes different forms in particular languages (Marttila 2009:40). Lexical iconicity is where there is an iconic relationship between form and referents. This concept is directly opposed to the standard Saussurian theory on the relationship between form, meaning and referent. Lexical iconicity can often be a factor in the formation of certain kinds of words, but overextending this phenomenon to all word creations can lead to faulty conclusions (Midgley 1996:72).

Although there are many different definitions of iconicity and symbolism, it is important to note that the terms are generally used for two different forms of abstraction. First are abstractions of qualities, i.e., icons. "A critical point, easily overlooked, is that, while an icon always creates meaning by resemblance, that resemblance might be to pure feeling (as in Munch's abstract painting *The Scream*), or that resemblance might be to a physical object (as in a photograph of an airplane), or that resemblance might be to informational relationships (bars on a graph analogous to relative piles of steel produced by Canada and the US in a year)" (Amare & Manning 2007:3). Strict iconicity is the most difficult to understand. It simply exists by itself, neither referring to anything nor lying behind anything, i.e. unrelated and separate from everything else; it is pure perception. Iconic images are icons that resemble physical objects. Informative icons are icons that resemble relationships. Next are abstractions of relationships, i.e., symbols. A symbol is a structure, a relationship, or mediation between icons, or other symbols.

Lexical iconicity may best be understood by comparison to another iconic-symbolic system. As explained by Manning (1998), McCloud (1993), and Midgley (1996), the letter "A" originated as a depiction of a bull. **Figure 2** (overleaf) shows the gradual transformation from bull to letter. The initial bull drawing is an iconic image, a near true depiction of a bull i.e. a realistic image. As it morphs into a symbol it moves up the line from an iconic image to informative icon; i.e. an abstract or simplified version of the iconic image and then moves to a symbol (see **Figure 2**). This is not a complete system, as the decorative elements used in the depictions are also important.

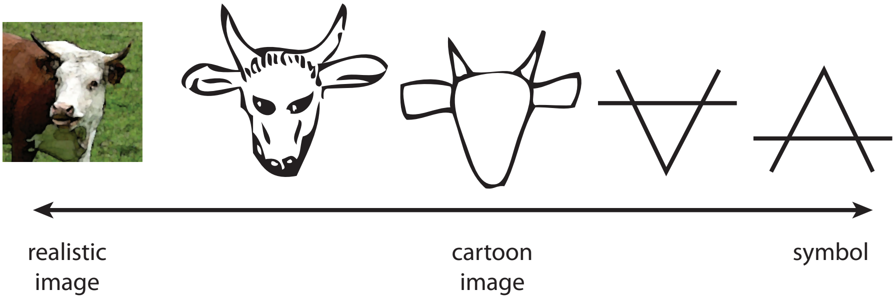

***Figure 2.*** *Development of "A".*

In this analogy onomatopoeia corresponds to the original depiction of the bull; mimetics to the cartoon image, and traditional Saussurian words to the letter "A." Although not explicitly depicted in **Figure 2**, sound symbolism is strict iconicity.

2. JAPANESE MIMETICS. Mimetics are easily cast into other lexical categories because of their strictly iconic roots. Consider the root *shizu* of *shizuka* 'quiet'. It does not become a nominal adjective without the *–ka* suffix, and it becomes a verb with the *–maru*/*–meru* suffixes (*shizumaru* 'to quiet down, become quiet', *shizumeru* to quiet, to calm). In general, mimetic roots change lexical categories by suffixation. The light verb *suru* adds verbiness, the adverbial markers *ni*/*-to*/*-te* add adverbiness, *ga* (subject marker)/*wa* (topic marker)/*no* (genetive) add nouniness, and *na* (nominal adjective marker) adds adjectivalness.

In this paper I follow the distinctions made in Japanese relating to onomatopoeia, lexical iconicity and mimetics. Japanese has three divisions: *giongo*, *gitaigo*, and *gijōgo*. *Giongo* are onomatopoeia or phonomimes, a direct mimicry of sounds; *gitaigo* are phenomimes—they represent the manner in which someone acts or something occurs; *gijōgo* are psychomimes that represent the speaker's internal feelings (Yamaguchi 2007:63). The borders between the three classifications are not clear-cut; some portions of *giongo* and *gijōgo* enter the domain of *gitaigo*, while *giongo* and *gijōgo* never overlap (Yamaguchi 2007:70), as can be seen in **Figure 3**.

I use the term mimetics to refer to both *gitaigo* and *gijōgo*; onomatopoeia for *giongo*; and lexical iconicity for all three.

There seem to be two extremes of semantic explanation for Japanese mimetics, Kita's affecto-imagistic dimension and Tsujimura's constructionalist approach, as mentioned above. Others tend either to implicitly agree with one or the other or to avoid the issue altogether by using the vague term iconicity. First, let's review Kita's proposal.

There are two levels of representation of semantics involved in any sentence containing a mimetic, an analytic dimension and an affecto-imagistic dimension. The analytic dimension is where normal semantics applies. In other words, it is the decompositional and hierarchical representation in terms of decontextualized semantic parts. The affecto-imagistic dimension is the interface between language and other forms of information in the mind, e.g. smell, kinesthesia, etc. In particular co-auditory iconic gestures originate from the

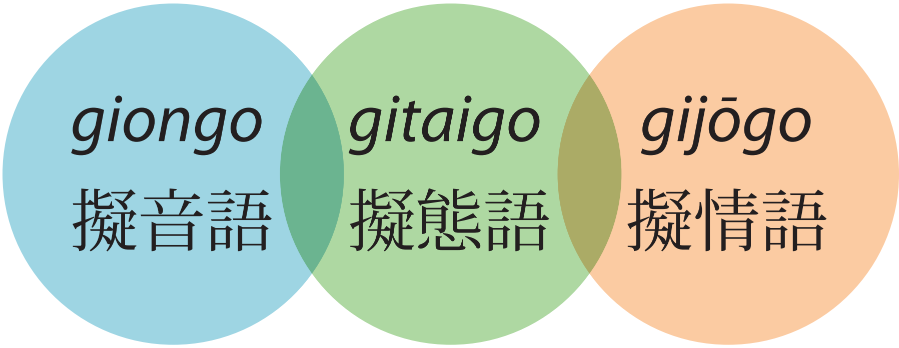

***Figure 3.*** *Japanese terminology overlap.*

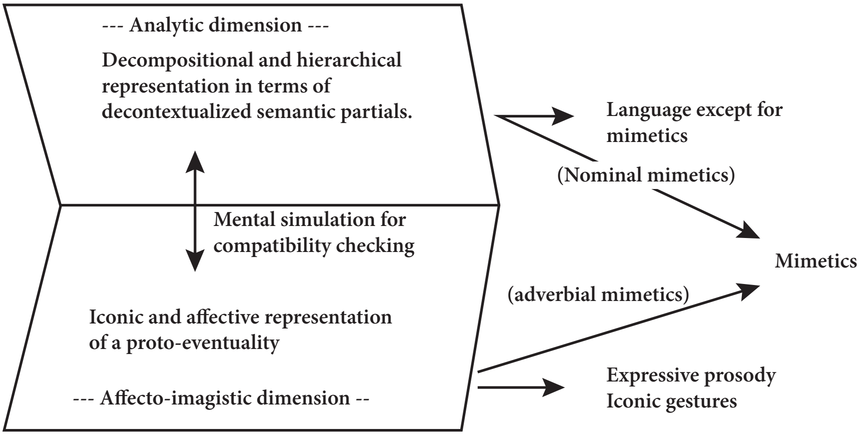
--- Analytic dimension ---
Decompositional and hierarchical representation in terms of decontextualized semantic partials.
Mental simulation for compatibility checking
Iconic and affective representation of a proto-eventuality
--- Affecto-imagistic dimension --
Language except for mimetics
(Nominal mimetics)
Mimetics
(adverbial mimetics)
Expressive prosody
Iconic gestures

***Figure 4.*** *Analytic and affecto-imagistic dimensions (based on Kita 1997:409).*

affecto-imagistic dimension (Kita 1997:409). Kita bases his proposals on data that show a high concomitance of gesture production and mimetic verbalization (Kita 1993, 1997, 2001). **Figure 4** shows the essence of Kita's proposals.

Kita proposes that all non-mimetic language resides only in the analytic dimension. Mimetics are divided into two categories: nominal and adverbial. Nominal mimetics are similar to the Japanese *keiyōdoshi* 'nominal adjectives' (e.g. *shizuka* 'quiet'), which have noun-like morphology and adjective-like semantics (Kita 1997:385–386). Adverbial mimetics are the common adverb-type mimetic. Nominal mimetics start from the analytic dimension and merge into the affecto-imagistic dimension. Adverbial mimetics exist only in the affecto-imagistic dimension (Kita 1993:391). As Kita explains:

> Mimetics are spontaneously produced in tight synchrony with a co-expressive iconic gesture in speaking. An utterance with a mimetic can only have the peak of expressive prosody on the mimetic. Also, negative affect is a meaning element

> that figures in the sound symbolism of mimetics. Mimetics' high association with phenomena that are traditionally characterized as "paralanguage" suggests that mimetics' meaning is beyond that of "language proper." I maintain that mimetics, spontaneous iconic gestures, and expressive prosody share meaning representation in the affecto-imagistic dimension, which is qualitatively different from the analytic dimension, the dimension of "language proper" in the Saussurian tradition. (1997:399)

Thus, mimetics are not within the standard realm of what is commonly considered in linguistic inquiry.

Tsujimura's proposal is based mainly on the cross categoriality and differing subcategorization frames of mimetics (see **Table 1** and **Table 2** for examples). Since many (if not all) mimetics can be used in multiple contexts with variations in specific meaning per context, Tsujimura proposes that the subcategorization requirements also vary with context, and these requirements determine the specific interpretation. Native Japanese and Sino-Japanese verbs all have specific and predicable subcategorization requirements while mimetics do not (Tsujimura 2005a:150–151). These facts lead Tsujimura to state that mimetics do not have "specific meanings, and that global information contributed by a whole sentence including the number of NPs and their grammatical functions, animacy of the subject, and verbal morphology together give rise to an explicit meaning" (Tsujimura 2005a:153). She also rejects the concept that these differences can be explained away by polysemy, since mimetics of supposedly similar meanings have different subcategorization requirements (Tsujimura 2005a: 152–153). Tsujimura's concern is not so much with the core meaning of the mimetic but with how the mimetic interacts with other elements in a sentence.

3. CORPUS DATA. It is assumed by many scholars that mimetic "words function essentially as adverbs" (Inose 2007:98) and "are intrinsic to the Japanese culture, and are, in fact, more closely related to the Japanese culture than standard adverbs" (Yang 1984:147). However, I was unable to find a data-based study to verify which mimetics occur most often as which part of speech (grammatical category). The remainder of this paper describes a preliminary study I performed to investigate this issue.

Three hundred and thirteen mimetics were initially analyzed in this study, and using the data from the Kotonoha[1] and JpWaC[2] Corpora. Based on the information reviewed above, I make the following assumptions:

1. Any mimetic followed by a *wa* (topic marker), *ga* (subject marker), *o* (object marker), or a *no* (genitive) acts like a noun.
2. Any mimetic followed by a *na* (adjective marker) acts like a nominal adjective.
3. Any mimetic followed by any form of *suru* 'to do' acts like a verb.
4. Any mimetic followed by *to* (quotative) or anything else acts like an adverb.

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[1] This corpus is available online at *http://www.kotonoha.gr.jp/cgi-bin/search_form.cgi?viaTopPage=1*

[2] This corpus is available online at *http://corpus.leeds.ac.uk/internet.html*

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| Mimetic | Kotonoha | | | | | JpWaC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | noun | adj | verb | adv | total | noun | adj | verb | adv | total |
| *bi(')kuri* 'surprise' | 17 | 62 | 1432 | 96 | 1607 | 30 | 142 | 1037 | 67 | 1276 |
| *bon-yari* 'dim, faint' | 3 | 3 | 183 | 526 | 715 | 5 | 5 | 262 | 696 | 968 |
| *sa'pari* 'refreshed' | 2 | 3 | 136 | 463 | 604 | 9 | 18 | 225 | 1081 | 1333 |
| *iraira* 'Irritation' | 67 | 4 | 433 | 77 | 581 | 159 | 11 | 1011 | 154 | 1335 |
| *su'kiri* 'neatly' | 6 | 0 | 330 | 171 | 507 | 7 | 5 | 1129 | 793 | 1934 |
| *barabara* 'scattered' | 38 | 113 | 17 | 333 | 501 | 186 | 786 | 88 | 801 | 1861 |
| *a'sari* 'easily/quickly' | 2 | 11 | 53 | 427 | 493 | 16 | 49 | 190 | 717 | 972 |
| *chirari* 'fleeting' | 0 | 0 | 1 | 242 | 243 | 8 | 1 | 15 | 137 | 161 |
| *boroboro* 'worn out tattered' | 38 | 3 | 7 | 189 | 237 | 211 | 58 | 115 | 1081 | 1465 |
| *chira'* 'at a glance' | 0 | 0 | 0 | 222 | 222 | 0 | 0 | 5 | 286 | 291 |
| *choi* 'Just a minute' | 2 | 0 | 1 | 183 | 186 | 34 | 13 | 42 | 827 | 916 |
| *butsubutsu* 'grumble' | 16 | 0 | 6 | 160 | 182 | 54 | 0 | 127 | 602 | 783 |
| *burabura* 'swing/sway' | 1 | 9 | 72 | 98 | 180 | 11 | 50 | 566 | 445 | 1072 |
| *urouro* 'loiteringly' | 1 | 1 | 140 | 34 | 176 | 1 | 0 | 169 | 26 | 196 |
| *boo'* 'dazedly/dimly' | 0 | 0 | 0 | 167 | 167 | 1 | 1 | 3 | 248 | 253 |
| *batabata* 'flapping/ rattling' | 4 | 0 | 44 | 108 | 156 | 79 | 41 | 691 | 549 | 1360 |
| *ba'tari* 'bang/suddenly' | 10 | 4 | 11 | 118 | 143 | 62 | 22 | 54 | 379 | 517 |
| *baribari* 'tearing/ crunching' | 26 | 11 | 11 | 88 | 136 | 299 | 77 | 89 | 752 | 1217 |
| *bashibashi* 'dry crackling' | 3 | 1 | 9 | 119 | 132 | 0 | 0 | 2 | 11 | 13 |
| *ba'chiri* 'properly' | 27 | 29 | 13 | 62 | 131 | 17 | 221 | 170 | 291 | 699 |
| *biku(')* 'surprise' | 2 | 0 | 1 | 126 | 129 | 10 | 2 | 26 | 154 | 192 |
| *chirachira* 'fluttering' | 0 | 0 | 16 | 110 | 126 | 7 | 0 | 54 | 347 | 408 |
| *bi'shiri* 'closely packed' | 0 | 7 | 4 | 113 | 124 | 12 | 12 | 50 | 372 | 446 |
| *po'po* 'steam train' | 59 | 6 | 28 | 9 | 102 | 9 | 2 | 2 | 2 | 15 |
| *be'tari* 'closely/thickly' | 5 | 6 | 8 | 80 | 99 | 46 | 45 | 26 | 173 | 290 |

***Table 3.*** *Sample of mimetic category frequencies (continued overleaf).*

It should be noted that a mimetic does not actually change its part of speech (grammatical category) but is categorized purely on usage. So, a mimetic followed by a *na* is not actually a nominal adjective but it is being used as if it were, etc.

As can be seen from **Table 3**,[3] most mimetics occur most frequently as adverbs. However, as **Figure 5** (overleaf) shows, the Kotonoha corpus has a slight preference for verbs over

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[3] **Table 3** is not a complete listing of the mimetics examined.

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| Mimetic | Kotonoha | | | | | JpWaC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | noun | adj | verb | adv | total | noun | adj | verb | adv | total |
| *utouto* 'dozing' | 0 | 0 | 52 | 46 | 98 | 1 | 0 | 290 | 128 | 419 |
| *noronoro* 'slowly' | 1 | 1 | 12 | 82 | 96 | 10 | 52 | 52 | 131 | 245 |
| *bikubiku* 'timid/nervous' | 1 | 8 | 60 | 18 | 87 | 3 | 15 | 259 | 39 | 316 |
| *kyorokyoro* 'look around' | 0 | 0 | 38 | 48 | 86 | 3 | 6 | 168 | 113 | 290 |
| *betabeta* 'sticky' | 3 | 3 | 36 | 42 | 84 | 42 | 50 | 135 | 138 | 365 |
| *perapera* 'fluent' | 9 | 5 | 4 | 63 | 81 | 84 | 38 | 46 | 399 | 567 |
| *guchagucha* 'pulpy/sloppy' | 17 | 2 | 2 | 51 | 72 | 97 | 33 | 60 | 267 | 457 |
| *surasura* 'smoothly' | 1 | 6 | 0 | 64 | 71 | 3 | 29 | 40 | 348 | 420 |
| *banban* 'pounding/ banging' | 1 | 3 | 4 | 56 | 64 | 13 | 28 | 68 | 584 | 693 |
| *chokochoko* 'toddling' | 0 | 0 | 1 | 59 | 60 | 4 | 1 | 28 | 479 | 512 |
| *chira-hora* 'here and there' | 1 | 0 | 7 | 51 | 59 | 9 | 2 | 187 | 549 | 747 |
| *chokuchoku* 'often/ frequently' | 0 | 0 | 2 | 54 | 56 | 7 | 0 | 7 | 518 | 532 |
| *buruburu* 'shivering' | 2 | 0 | 2 | 42 | 46 | 9 | 1 | 79 | 200 | 289 |
| *chon* 'clap/chop' | 6 | 0 | 7 | 32 | 45 | 93 | 3 | 15 | 278 | 389 |
| *bochibochi* 'little-by-little' | 0 | 0 | 4 | 41 | 45 | 25 | 2 | 96 | 681 | 804 |
| *ba'sari* 'with a single stroke' | 0 | 1 | 5 | 29 | 35 | 1 | 1 | 43 | 261 | 306 |
| *seisei* 'refreshed' | 0 | 0 | 24 | 8 | 32 | 0 | 0 | 45 | 17 | 62 |
| *bokoboko* 'burbling, hollow' | 2 | 1 | 5 | 24 | 32 | 15 | 5 | 22 | 270 | 312 |
| *cha'kari* 'shrewd' | 1 | 0 | 5 | 20 | 26 | 4 | 3 | 26 | 284 | 317 |
| *mesomeso* 'whining' | 0 | 0 | 11 | 11 | 22 | 8 | 1 | 52 | 14 | 75 |
| *chimachima* 'small/ compact' | 0 | 0 | 4 | 13 | 17 | 0 | 0 | 67 | 289 | 356 |
| *gabagaba* 'loose/over-sized' | 0 | 1 | 0 | 5 | 6 | 2 | 2 | 4 | 39 | 47 |

***Table 3** (cont…)*

adjectives; while JpWaC shows more adjectives than verbs. **Figure 5** shows the percent of occurrence for the four categories examined for both the Kotonoha and JpWaC Corpora. The percent occurrence was derived by dividing the occurrence of each category by the total number of occurrences, e.g. *seisei* has 75% (24/32*100) occurrence as a verb, and 25% (8/32*100) occurrence as an adverb.

The results in **Figure 5** are not particularly surprising. Adverbs have the highest frequency while nouns and adjectives have the lowest. This corresponds nicely with native

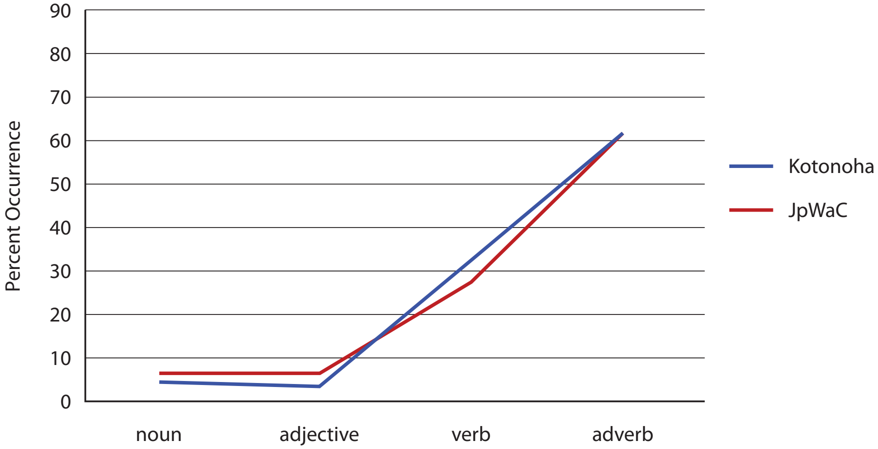

***Figure 5.*** *Percent occurrence by category for all mimetics examined.*

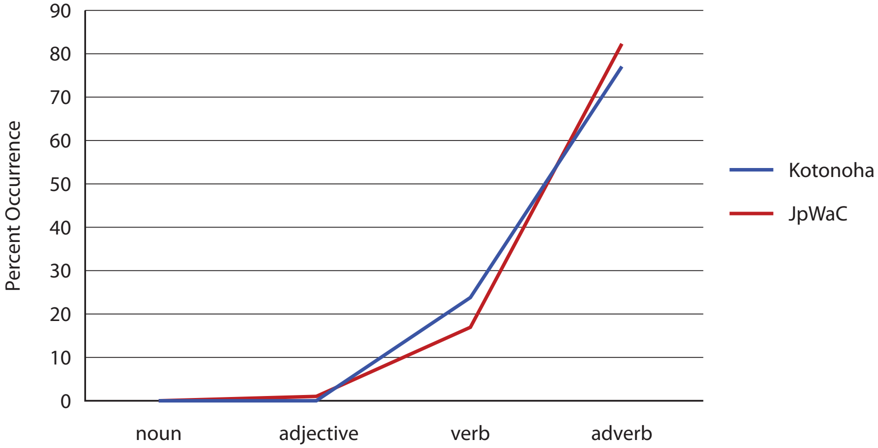

***Figure 6.*** *Percent occurrence by category for* sa'pari.

speakers' intuition and researchers' assertions that mimetics tend to be used as adverbs most frequently. However, an examination of individual mimetics shows three interesting groupings. First are the mimetics that resemble the total of all mimetics examined, such as *sa'pari* in **Figure 6**. These mimetics are the most common and most frequently occur as adverbs. The next grouping is mimetics that occur most frequently as verbs, such as *seisei* in **Figure 7** (overleaf). These mimetics are not as numerous as the first group but are commonly used. The final group is the least frequent and common; these mimetics occur most frequently as nouns or adjectives, such as *meromero*, seen in **Figure 8**(overleaf).

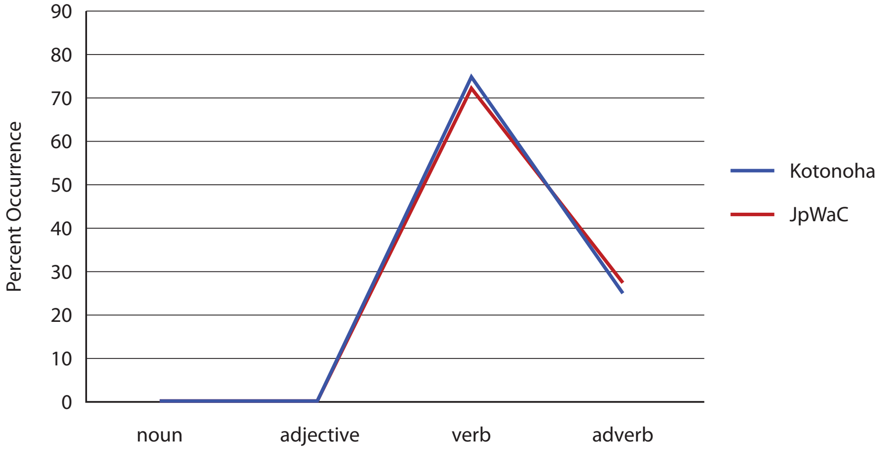

***Figure 7.*** *Percent occurrence by category for* seisei.

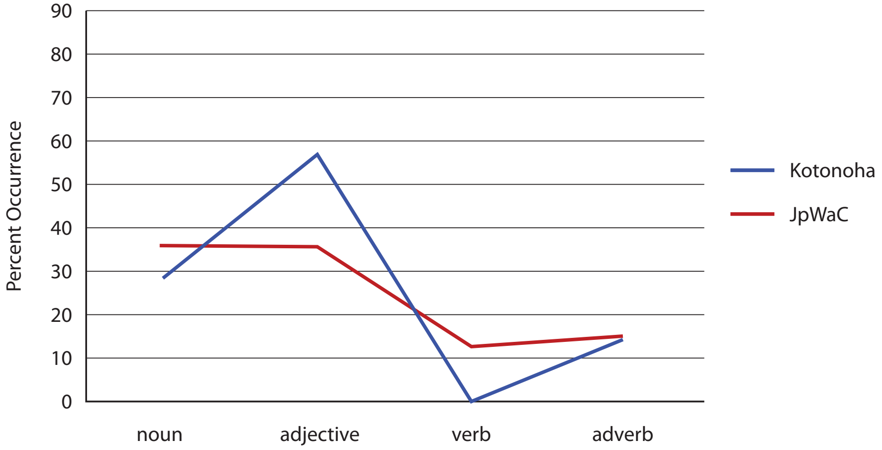

***Figure 8.*** *Percent occurrence by category for* meromero.

These groupings were unexpected. A possible explanation is that the more symbolic a mimetic becomes the more frequently it occurs as a verb, noun, or adjective, while more iconic mimetics occur as adverbs.

Mimetics can be compounded, as with *kira-biyaka* 'gorgeous, dazzling, gaudy' from *kirakira* 'bright, sparkly' and *biyaka* 'gorgeous' a bound morpheme. They even compound with English loans as in *wakuwaku rando* '*wakuwaku* land', the name of an amusement park (Oda 2000:103–104). It is interesting that *rendaku* (a common compounding process in Japanese where the initial consonant of the secondary word becomes voiced) compounds with non-mimetic words, but it usually appears in mimetic compounds (Labrune 2006:33–34). Obviously mimetic compounding requires further study.

In an expanded survey, the first steps would be to see which of the 1,600–1,700 mimetics that exist occur most frequently, then to see which category these mimetics occur as. It would be interesting to see if the frequency of use affects which category the mimetic occurs as. This can then be used to measure the iconicity or symbolism of the mimetic.

Since the cross-categoriality of mimetics is the crux of most of the current research on Japanese mimetics, it would be interesting to examine them from the symmetrical voice and precategorial frameworks postulated by Foley (1998). Mimetics are very similar in that they almost always need a particle or affix to add the subcategorization components. The difficulty arises in that often when occurring as an adverb the *to* quotative marker is optional, as discussed in some detail by Tamori (1980), Hamano (1998), Asano (2003), and Toratani (2005, 2006).

4. CONCLUSION. Japanese mimetics have recently become a topic of discussion in the linguistic literature. The very ubiquity of the mimetics and their unique linguistic properties are a rich area for research. It is the iconic image qualities that allow native speakers to refer to something bodily or visual in some Japanese mimetics (Akita 2006:18), and to have surreal sense of meaning. This also explains many of the peculiar semantic qualities found in Japanese mimetics.

However, some scholars tend to treat Japanese mimetics as something totally unique to Japanese culture and language (Oda 2000:101). Japanese mimetics may be "somewhat different from prosaic words, but they are not 'outre-systeme', i.e. they usually stretch the system of some language a bit, but they do not totally disregard it" (Newman 2001:251). What differences exist between prosaic language and "mimetics should be given more scrutiny [...] as there is little doubt that more potentially interesting aspects [will] be unveiled" (Tsujimura & Deguchi 2007:351).

A good example of areas for further research is the difference between Sino-Japanese pseudo-mimetics, such as *hisabisa* 'a long while' or *iroiro* 'various', and normal mimetics. These two groups are distinguished orthographically and phonologically. Orthographically mimetics are written in katakana or hiragana, while Sino-Japanese pseudo-mimetics are written in kanji. Phonological Sino-Japanese pseudo-mimetics have a change in voice while compounding mimetics do not. Whether these are the only differences has yet to be investigated.

Whether mimetics have a separate semantic space (Kita 1997:2001) or not (Tsujimura 2001, 2005a, 2005b, Tsujimura & Deguchi 2007), mimetics are used very frequently in all levels of Japanese, and they are considered one the most difficult aspects of the language for those learning Japanese, for translators (Inose 2007:97) and linguists as well.

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# TOWARDS A COGNITIVELY REALISTIC ACCOUNT OF CLITICS

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**Abstract:** Earlier work had suggested that the diachronic progression of second-position (2P) clitics via verb-clitics to verb-affixes results from a progressive lexicalization of clitics with their host. Arguments for different sections of this progression are based here on Polish, Croatian, and Slovenian data. From a more synchronic point of view, an outline is then presented of the factors determining the position of clitics in present-day Croatian and Slovenian. They include the 'given' nature of pronominal and auxiliary clitics (in the sense of information structure), the distinction between enclitics and proclitics, and the effects of lexicalization. Finally, the Relational Network Grammar framework employed in the article is contrasted with alternative approaches within Optimality Theory and the Minimalist version of Generative Grammar.

**Keywords:** Second-position clitics, verb-clitics, enclitics, proclitics, clitic clusters, verb-affixes, lexicalization/entrenchment, prefabricated expressions, diachronic, synchronic, given vs. new information, interrupted/split complex constituents, cognitively realistic models, cognitive load, Relational Network Grammar, Optimality Theory, Minimalism.

**Languages:** (Serbo-)Croatian, Slovenian, Polish, Russian, Macedonian, Bulgarian, Latin, French, Spanish, Italian.

four earlier papers on clitics were concerned largely with unstressed auxiliary verbs and unstressed object pronouns in various Slavic languages (Bennett & Leeming 1996; Bennett 2002, 2004, 2006).[1] They all referred to the diachronic progression in (1), where '2P' means 'second position', and they had the ultimate goal of discovering the mechanism underlying the progression in question.

| (1) | A | | B | | C | | D |
|---|---|---|---|---|---|---|---|
| | 2P clitics<br>(word-based) | → | 2P clitics<br>(constituent-based) | → | verb clitics | → | verb affixes |

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[1] I am grateful as always to Simona Bennett for help with Slovenian and Croatian examples. I also gratefully acknowledge very constructive comments from the anonymous reviewers of this article, which have undoubtedly contributed to improving the final version. Remaining defects are, of course, my own responsibility.

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Stage A was illustrated by Croatian examples such as (2)a, where the (bold, italicized) clitics follow the first word of the complex clause-initial constituent *sl(i)jedeće godine* 'next year'.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (2) | a. [Cr] | Sl(i)jedeće | ***će*** | ***se*** | godine | formirati | jedna | liga |
| | | next | will | self | year | form | one | league |
| | b. [Cr] | Sl(i)jedeće | godine | ***će*** | ***se*** | formirati | jedna | liga |
| | | next | year | will | self | form | one | league |
| | | 'Next year one league will be formed' | | | | | | |

In addition, Croatian illustrates stage B, as in (2)b, where the same clitic cluster occurring in (2)a follows the first constituent as a whole. Croatian is thus in transition between stages A and B. Slovenian was described as illustrating stage B—cf. (3)a; and, since (3)b is ungrammatical in modern spoken prose, it was assumed that Slovenian has already moved beyond stage A (Bennett 2006:280). It will be necessary to return briefly to this issue in section 2.2.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (3) | a. [Sl] | Naslednje | leto | ***se*** | ***bo*** | zmanjšalo | število | ekip |
| | | next | year | self | will | reduce | number | of.teams |
| | b. [Sl] | *Naslednje | ***se*** | ***bo*** | leto | zmanjšalo | število | ekip |
| | | next | self | will | year | reduce | number | of.teams |
| | | 'Next year the number of teams will be reduced' | | | | | | |

Bulgarian and Macedonian illustrate stage C, as do also Romance languages such as French and Spanish. Finally, verb-clitics may become verb-affixes, stage D. For instance, the reflexive pronoun of Russian—*ся* /sja/—now occurs only as a verb-suffix, e.g., in *бриться* 'to shave (oneself)':

| | | | | |
|---|---|---|---|---|
| (4) | [Ru] | брить | ся | /brit'sja/ |
| | | to.shave | self | |
| | | 'to shave (oneself)' | | |

However, as pointed out in Bennett 2002:175, it is by no means necessarily the case that a given language occupies just one position along the scale represented by (1). Thus, although the reflexive marker of Russian illustrates stage D, its interrogative marker *ли* (*li*) conforms still strictly to stage A patterning (Bennett 2002:175, Franks & King 2000:189). Polish is particularly complex from this point of view. Examples (5)a–c (from Franks & King 2000:158) illustrate stages A, B and C/D respectively.

| | | | | | |
|---|---|---|---|---|---|
| (5) | a. [Po] | Ciekawą-***ś*** | książkę | kupiła | Janowi |
| | | interesting-aux2sg | book | bought.f | for.Jan |
| | b. [Po] | Ciekawą | książkę-***ś*** | kupiła | Janowi |
| | | interesting | book-aux2sg | bought.f | for.Jan |

(5) c. [Po] Ciekawą książkę kupiła-*ś* Janowi
interesting book bought.f-aux2sg for.Jan
'You (f.sg.) bought an interesting book for Jan'

As for (5)c and our reference to stage "C/D", some writers argue that *kupiłaś* in this example ends with an inflectional affix, and therefore represents stage D (e.g., Franks *&* King 2000:139–46, 162, 297–98) and they cite various kinds of phonological evidence in support of such an analysis (see also Spencer 1991:370–71 and Andersen 1987:31–33 for discussion of the same evidence). Admittedly, though, Franks and King (2000:162) treat the Polish person-and-number markers as clitics in other contexts, e.g., in (5)a–b. On the other hand, Spencer (1991:371–73) regards the fact that they may be attached to words of almost any category as evidence that they are clitics in general. Thus even when they are attached to the verb he regards them as clitics; hence in such examples as (5)c they would represent stage C rather than D, according to his analysis. To tackle all the complexity of Polish is beyond the scope of this paper. However, in section 2.1 we shall see that Polish sheds important light on the issue of lexicalization, which is a central topic of the paper.

The main point for which Bennett (2006) argued was that the progression shown in (1) involves not three separate transitions but a single homogeneous diachronic process that depends on the degree of lexicalization between clitics and their 'host'. The present paper has three aims. First, it provides further elaboration and clarification of the earlier discussion of lexicalization—see sections 1 and 2. Secondly, in section 3 it shifts the emphasis somewhat from the diachronic orientation of the earlier papers (and section 2) towards a more synchronic orientation. Moreover, in adopting a more synchronic standpoint, it at the same time begins to explore what a cognitively realistic approach to clitics might involve. By this I mean that it accepts the challenge of "model[ing] the system actually used by speakers of a language" (Lamb 1999:170). Finally, section 4 of the paper summarizes the emerging picture.

1. LEXICALIZATION: THE GENERAL PICTURE. The view of lexicalization invoked by Bennett (2006:280–81) was that of Lamb (1999:163–70), i.e., that combinations of morphemes that frequently co-occur are likely to become stored in the brain as units. Langacker's (1999:93–100, 121–5; 2008:16–17) discussion of 'entrenchment' is very similar, e.g., "With repeated use, an expression of any size or degree of compositionality can be entrenched and conventionalized" (1999:122). Moreover, both scholars emphasize that the process of lexicalization is a gradual one, and that the more often a particular combination occurs, the more likely it is to occur again. Crucially, then, rather than being created afresh out of their ultimate constituents each time they are used, many combinations are retrieved from memory as prefabricated expressions (Lamb 1999:169; Langacker 2008:19). Lamb and Langacker go further to argue that, in speech comprehension and production in general, speakers rely heavily on retrieving a substantial inventory of such prefabricated expressions from memory. It should be added, though, that within the framework of Lamb's Relational Network Grammar (RNG) there does not have to be an either-or choice between process-

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ing a particular combination on the basis of its components and processing it as a unit. Rather, the two may operate in parallel (Lamb 1969:166).

## 2. DIACHRONY.

2.1. STAGE B TO STAGE C. The shift of a language from a 2P-clitic system to a verb-clitic system, i.e., stages B → C in (1)—which happened, for instance, between Latin and such Romance languages as French and Spanish—obviously takes place gradually rather than overnight. Within the Slavic family, Polish is of particular interest from this point of view, since it has been undergoing the change in question for the last five hundred years (cf. Andersen 1987:43, reporting the work of Rittel 1975). There are several respects in which present-day Polish still exhibits a mixed system—for instance, one and the same clitic may appear sometimes at 2P and sometimes attached to a non-initial verb (Bennett 2006:283), or a clitic cluster may be split up with one part at 2P and the remainder attached to the verb (Bennett & Leeming 1996:357–58, Spencer 1991:369, Decaux 1955:28). However, the best evidence for our lexicalization explanation of the shift towards a verb-clitic system comes from Rittel's observations concerning the start of the shift in question. Namely, Rittel observed (1975:120, 146), as reported by Andersen (1987:35), that the earliest participles to attract the Polish person-and-number markers away from 2P were: *był, został, miał, mógł,* and *chciał*, from the verbs meaning 'be', 'become', 'have', 'be able to' and 'want', which are among the most frequently used verbs in the language.[2] All the Slavic languages had the possibility of beginning a sentence with an *-l* participle followed by an auxiliary. What seems to have happened in Polish, then, is that the most frequent participles tended to take their auxiliary with them when they occurred at some later position in a sentence. This is precisely what the lexicalization hypothesis would predict. Particular combinations of a verb with one or more clitics are lexicalized to a certain degree and combinations with the most frequent verbs would be lexicalized to a greater extent than combinations with less frequent verbs. In a language in transition between the two types of system there is still pressure for clitics to occur at 2P (see sections 3.2 and 4 for discussion of this point), but this pressure can be overridden, when a verb of high frequency occurs non-initially, because of the tendency for clitics to be attached to the verb itself. As combinations of less frequent verbs with clitics are used more and more over time, they too may eventually attract clitics away from 2P when they occur later in a clause.

Andersen points out also (1987:35) that "agglutination [to a non-initial verb] is far and away more common in main clauses than in subordinate clauses". In subordinate clauses, taking the example of the conditional auxiliary *by* 'would', Rittel points out (1975:143) that migration of the auxiliary away from 2P "is strongly disfavored by the occurrence of

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[2] The status of what I am referring to here as 'participles' is obscured by the fact that in the 3rd person, both singular and plural, there is a zero marker of the auxiliary, which might suggest that they are past tense forms on their own. However, in the 1st and 2nd person they have overt person-and-number markers; and also, their cognates in the other languages discussed here are still participles. I have therefore preferred to retain the term 'participle'.

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| | | Search string | Meaning | Occurrences |
|---|---|---|---|---:|
| a | i | "jak***by go***" | 'as if…him' | c. 85,400 |
| | ii | "jak ***by go***" | 'as if…him' | c. 42,700 |
| b | i | "chciał***by go***" | 'would want him' | c. 13,600 |
| | ii | "chciał ***by go***" | 'would want him' | c. 2,360 |
| | iii | "***by go*** chciał" | 'would want him' | c. 2,350 |
| c | i | "zdzielił***by go***" | 'would hit him' | 111 |
| | ii | "zdzielił ***by go***" | 'would hit him' | 0 |
| | iii | "***by go*** zdzielił" | 'would hit him' | 2 |

***Table 1.*** *Google frequencies (July 11, 2009) for particular Polish expressions.*

conjunctions in clause-initial position" (as paraphrased by Andersen 1987:35). A relevant example is provided in (6):

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (6) | [Po] | jak***by*** | ***go*** | ktoś | zdzielił | pałką | gumową | po | ciemieniu |
| | | as-would | him | somebody | hit | stick | rubber | on | temple |

'as if someone hit him on the head with a rubber truncheon'

The clitic cluster *by go* occurs here at 2P, i.e., in the original position for clitics, and it is well known that the word order of subordinate clauses tends to be more conservative than that of main clauses. However, it is clear that lexicalization is also involved, in that dictionaries of Polish have an entry not only for *jak*, meaning 'how, as, if, than' but also for *jakby* as a compound conjunction, meaning 'as if, if'. It is possible therefore that there is competition here between the conjunction and the *-l* participle *zdzielił* 'hit' to attract the clitics, and that the conjunction wins out because of the greater degree of lexicalization that it has with the clitics in question. **Table 1** shows the results of a Google search in Polish-language texts, as of July 11 2009, for relevant morpheme-strings containing the clitic cluster *by go* 'would…him'. The host of *by go* in row (a) is the conjunction *jak* 'as'; in row (b) it is the *-l* participle *chciał* 'want(ed)'; and in row (c) the *-l* participle *zdzielił* 'hit'. The verb *chcieć* 'to want' has a much higher frequency than *zdzielić* 'to hit', as can be inferred from comparing the figures in rows (b) and (c). Specifically, the Google search revealed very few examples of *zdzielił* combined with *by go*. However, the combination of the conjunction *jak* with *by go*—cf. row (a)—was considerably more frequent than even the high-frequency participle *chciał*—row (b). (Rows (a)–(c) of **Table 1** are split into (i) and (ii) because *by* 'would' may be attached to its host conjunction or participle either with or without a space.[3] A third possibility with participles is that a clitic cluster may precede them, as in (b)iii and (c)iii.

If the frequencies in **Table 1** are representative of a typical speaker's receptive and productive experience with the strings in question, it seems quite likely that, in the process of producing a clause with the meaning of example (6), a speaker might retrieve the string *jak*

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[3] The pronunciation of *jakby go* and *jak by go* is the same—with the accent on *jak*. Given the degree of lexicalization in this example, the spelling variant that omits the space seems more appropriate.

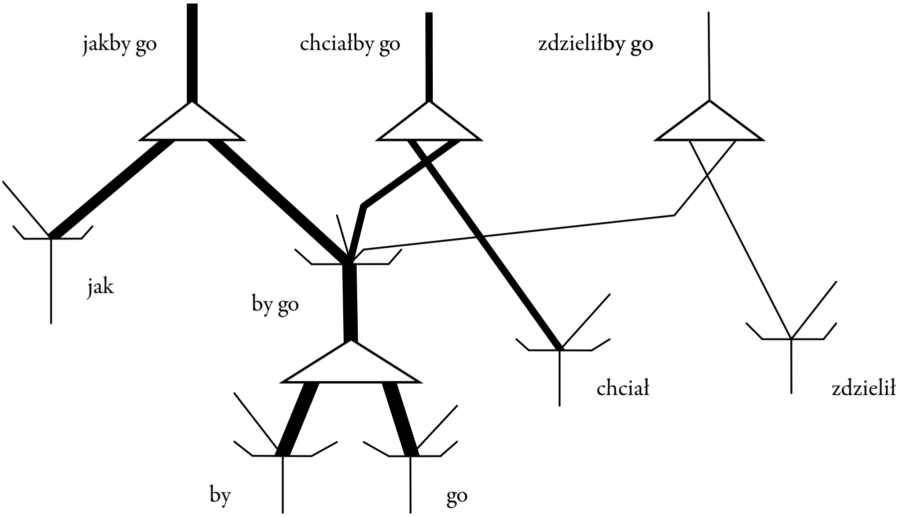

***Figure 1.*** *Four degrees of lexicalization in four Polish morpheme-strings:* zdzieliłby go *'would hit him',* chciałby go *'would want him',* jakby go *'as if…him', and* by go *'would…him' (as indicated approximately by the thickness of the lines).*

+ *by* + *go* from memory as a prefabricated expression. By contrast, it seems considerably less likely that he/she would have such ready access to the string *zdzielił* + *by* + *go*, since for most speakers this would not be sufficiently lexicalized/entrenched.

**Figure 1** is an attempt to represent, albeit very approximately, some of the information in **Table 1** in an alternative format—namely, in the notation of Lamb's (1999:66–83) RNG, showing the degree of lexicalization in particular Polish morpheme-strings by means of the thickness of the lines (the greater the degree of lexicalization, the thicker the lines). The string *zdzielił* + *by* + *go* 'would hit him', which potentially might have occurred in an alternative version of example (6), has the lowest degree of lexicalization. The string *chciał* + *by* + *go* 'would want him' has a rather higher degree of lexicalization but is, of course, not a candidate for use in a clause with the meaning of (6). The string *jak* + *by* + *go* 'as if… him', which does occur in (6), has a still higher degree of lexicalization. Finally, the shorter string *by* + *go* 'would … him' has the highest degree of lexicalization, since it also occurs in many combinations other than the ones shown in **Figure 1**. (The Google search yielded c. 998,000 examples of *by go*.)

Several pieces of evidence support the view that Polish is proceeding from stage B of (1) towards C (and beyond), rather than from C to B. First, this is the direction of change in the Romance languages, between Latin and such modern languages as French and Spanish, and therefore a candidate for the direction of change in languages generally. Secondly, within Slavic, the transition between 'Older Bulgarian' and modern Bulgarian exhibits the same direction of change (Franks & King 2000:318). Thirdly, this is the direction of change observed by Rittel (1975) in Polish texts from the last 500 years. Finally, textual analysis that

I carried out on the basis of c. 5,500 words of a Polish translation of George Orwell's novel *1984* revealed that, at least in the analyzed section of this text, several categories of clitics occurred exclusively adjacent to the verb, namely the past tense auxiliaries/inflections, the reflexive clitic *się* and all the dative clitic pronouns. (Accusative clitics appeared sometimes at 2P and sometimes attached to the verb.) Admittedly, since 27% of all the verbs in the analyzed text were in clause-initial position, many examples of verb-clitics were simultaneously at 2P. As for the difference between written and spoken language, written language is typically more conservative. On this basis one would predict that spoken Polish would exhibit a higher proportion of the innovating verb-clitic structure than written Polish. However, during the discussion of the oral presentation of this paper, Bill Sullivan reported that native speakers of Polish have informed him that the proportion of clitics occurring at 2P is higher in the spoken language than in written Polish, which is the opposite of what I would have predicted. Subsequent discussion with Urszula Zaliwska-Okrutna (herself a native speaker of Polish) revealed that she is inclined to agree with Sullivan's informants. Clearly what is needed to resolve this issue is an analysis of a corpus of spoken Polish. It is not out of the question that a particular diachronic process could be reversed under special circumstances—indeed, we shall encounter something comparable in relation to Croatian in section 2.2. However, the Polish case clearly requires further investigation. It was also pointed out to me by Zaliwska-Okrutna that there is an additional, more recent Polish translation of *1984* than the 1953 translation from which my statistics were derived. It would therefore be of interest to compare the two translations from the point of view of identifying any systematic discrepancies in their clitic usage.

2.2. STAGE A TO STAGE B. We turn now to the shift from stage A to stage B of (1). Stage A was illustrated above by Croatian example (2)a. Three further examples of clitics interrupting a complex constituent in this language are given in (7)a, (8)a and (9)a. They are taken from the Croatian translation of Orwell's *1984*. Examples (7)b, (8)b, and (9)b—which contain no interruption of a complex constituent—are the corresponding examples from the Slovenian translation of the same book.[4]

| | | | | | |
|---|---|---|---|---|---|
| (7) | a. [Cr] | Neko | ***ćete*** | vrijeme | raditi |
| | | some | you.will (plur) | time | work |

| | | | | |
|---|---|---|---|---|
| b. [Sl] | Nekaj | časa | ***bosta*** | delala |
| | something | of.time | you.will (dual) | work |

'You will work for a while'

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (8) | a. [Cr] | kojima | ***su*** | zidovi | poduprti | drvenim | gredama |
| | | to.which | are | walls | supported | wooden.instr | beams.instr |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| b. [Sl] | katerih | stene | ***so*** | podprte | z | lesenimi | bruni |
| | of.which | walls | are | supported | with | wooden | beams |

'whose walls are supported with wooden beams'

---

[4] The auxiliary *je* in (9), in both languages, is a form of the present tense of the verb *biti* 'to be'. I have glossed it as 'aux.past' because it is used here in forming the past tense.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (9) | a. [Cr] | sve | ***je*** | to | u | čovjeka | utjerivalo | strahopoštovanje |
| | | all | aux.past | this | into | human.being | drove.in | awe |
| | b. [Sl] | vse | to | ***je*** | plašilo | | | |
| | | all | this | aux.past | intimidated | | | |
| | | ‘all this was intimidating’ | | | | | | |

Before investigating how split constituents might die out in a language, we need first to confirm that a language may indeed lose its capacity for complex constituents to be interrupted by clitics. First, the early Latin structure of *populus se romanus erexit* (people self Roman raised) ‘the Roman people rose up’ was no longer in evidence by the time of the emergence of the separate Romance languages French, Italian, Spanish, etc.[5] Closer to home, with Slovenian, Stone (1996:217) gives examples of clitics interrupting the first syntactic constituent of a clause from the earliest Slovenian texts, the *Brižinski spomeniki* (Freising monuments), but examples such as (3)b are generally regarded as ungrammatical in modern Slovenian. (We will, however, return to this issue below.) Even closer to home, Reinkowski (2001) analyzed Serbian and Croatian newspaper articles from the years 1905, 1935, 1965 and 1995, and reported that the number of split constituents was gradually declining in both languages/dialects during the twentieth century. She reported, further, that Croatian exhibited considerably more split constituents than Serbian, but her most interesting revelation was that after a gradual decline from 1905 through 1935 to 1965, the Croatian texts for 1995 showed a big increase in the number of split constituents (Reinkowski 2001:194, 199). Significantly, this date is after the break-up of Yugoslavia, when Croats were enjoying their linguistic independence from Serbia and when the splitting of complex constituents by clitics was regarded as a positive feature of a more careful style of Croatian (Barić *et al.* 1999:268, Reinkowski 2001:301–2). Earlier Browne had written:

> [I]n general it is more old-fashioned and literary to break up a phrase by putting the enclitics after the first word[…] In everyday and conversational style, enclitics are more likely to be put after the whole phrase. (1975:114)

However, when speakers/writers are aware of the sociolinguistic significance of a particular structure, their conscious use of it can reverse the decline that would otherwise be expected to take place.

If, however, it is normal in general for split constituents to die out over time, it is of interest to ask to what extent the notion of lexicalization/entrenchment is involved in this process. We saw earlier, in the case of increased lexicalization involving the participle + clitic(s) construction and the conjunction + clitic(s) construction, that increased usage is self-perpetuating: the more particular combinations are used, the easier it is to use them again. The pathways through the network of a grammar become progressively

---

[5] The Latin quotation is from Cicero’s essay on rhetoric dedicated to Marcus Junius Brutus, § 12. It is prose rather than poetry, and therefore more likely to reflect the word order of the spoken language of the time. I am grateful to Toby Griffen for reminding me of the importance of this fact.

| Croatian | |
|---|---|
| verb | 32% |
| noun | 17% |
| complementizer | 12% |
| adverb | 11% |
| relative pronoun | 9% |
| subordinate conjunction | 7% |
| (stressed) pronoun | 6% |
| adjective | 4% |
| coordinate conjunction | 1% |
| numeral | 1% |
| determiner | 0.5% |

| Slovenian | |
|---|---|
| noun | 24% |
| verb | 15% |
| adverb | 14% |
| relative pronoun | 11% |
| complementizer | 9% |
| subordinate conjunction | 9% |
| pause/intonation boundary | 8% |
| (stressed) pronoun | 4% |
| coordinate conjunction | 3% |
| adjective | 2% |
| question particle | 0.6% |
| numeral | 0.2% |

***Table 2.*** *Left contexts of clitics in Croatian and Slovenian on the basis of approximately 400 clitics/clitic clusters in c. 5,500 words of the Croatian and Slovenian translations of Orwell's* 1984.

wider with increased use, like pathways through a meadow or jungle (Lamb 1999:179). By contrast, reduced use makes structures less likely to be used in future (Langacker 1999:100), in the same way that a path through the jungle becomes overgrown again with reduced use. During the discussion following the oral presentation of this paper, Ronald Langacker suggested that the demise of interrupted constituents may result from their increased cognitive load, which latter depends on the fact that speakers need to remember to complete the interrupted constituent after inserting a clitic cluster. This would presumably be a separate factor from lexicalization, but lexicalization may also be involved in that the gradually dwindling use of split constituents in Serbian and Croatian may be a consequence of the increasing lexicalization of competing structures, e.g., of structures where a clitic cluster follows a whole noun phrase rather than, say, a determiner or numeral or adjective. The figures in **Table 2** are suggestive here. For instance, in Croatian, where clitics may interrupt constructions of adjective + noun, or determiner + noun, or numeral + noun, it happens more frequently that clitics immediately follow an adjective or determiner or numeral than in Slovenian. Conversely, clitics immediately follow a noun more frequently in Slovenian than in Croatian. Admittedly, however, the figures in **Table 2** deserve more detailed discussion than we are able to devote to them here, and the explanation of some of the differences between the two languages in the positioning of their clitics therefore remains uncertain. We will, however, return to this issue in section 4.

What is certain, though, is that as the use of split constituents decreases, some structures must die out before others. For instance, among the structures that can be split in Croatian, the following (listed by their English translations) are a small sample: 'all that', 'how far?', 'really beautiful', 'that woman'. Moreover, an obvious hypothesis is that the most lexicalized structures would persist longest. With regard to the splitting of Croatian *sve to* 'all that' and *ta žena* 'that woman', a Google search carried out on August 1 2009 sug-

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| | | Search string | Meaning | Occurrences |
|---|---|---|---|---|
| a | i | [Cr] “sve ***je*** to...” | ‘all that has (aux) / is...’ | c. 519,000 |
| | ii | [Cr] “sve to ***je***...” | ‘all that has (aux) / is...’ | c. 90,100 |
| b | i | [Cr] “ta ***je*** žena...” | ‘that woman has (aux) / is...’ | c. 1,970 |
| | ii | [Cr] “ta žena ***je***...” | ‘that woman has (aux) / is...’ | c. 3,000 |
| c | i | [Sl] “vse ***je*** to...” | ‘all this has (aux) / is...’ | c. 7,560 |
| | ii | [Sl] “vse to ***je***...” | ‘all this has (aux) / is...’ | c. 93,800 |
| d | i | [Sl] “tista ***je*** ženska...” | ‘that woman has (aux) / is...’ | 0 |
| | ii | [Sl] “tista ženska ***je***...” | ‘that woman has (aux) / is...’ | c. 170 |

***Table 3.*** *Google frequencies (August 1, 2009) for particular Croatian and Slovenian expressions.*[6]

gests that split versions of *sve to* are lexicalized to a greater degree than split versions of *ta žena*—cf. **Table 3**. (The non-split version of *ta žena* in row (b.ii) of the table occurs rather more frequently than the split version in (b.i). By contrast, the split version of *sve to* in row (a.i) occurs considerably more frequently than its non-split counterpart in (a.ii).) Interestingly, a Google search carried out on the corresponding Slovenian expressions *vse to* ‘all this’ and *tista ženska* ‘that woman’ revealed that *vse to* in Slovenian can in fact, contrary to my previous assumption, still be interrupted—cf. **Table 3**, row (c.i), even though the non-split version in (c.ii) is considerably more frequent. (Example (9)b, from the Slovenian translation of *1984*, uses non-split *vse to* ***je***...) Thus it was wrong to imply that the ability for clitics to split a complex constituent has been completely lost in Slovenian (cf. Bennett 2006:280). A relevant example is given in (10). Such examples represent the residue of what was once presumably a rather more frequent structure in Slovenian. Golden and Sheppard (2000:200) also give a split example of the structure illustrated by ‘really beautiful’, cf. (11).

| | | | | | | |
|---|---|---|---|---|---|---|
| (10) | [Sl] | Vse | ***je*** | to | povezano | s | financami |
| | | all | is | this | connected | with | finances |
| | | ‘All this is connected with finances’ | | | | | |
| (11) | [Sl] | Zelo | ***si*** | dolgočasen | | | |
| | | very | you.are | boring | | | |
| | | ‘You are very boring’ | | | | | |

## 3. SYNCHRONIC ANALYSES: SOME PRELIMINARIES.

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[6] There is quite a discrepancy between the figures in rows (b) and (d) of **Table 3**. It depends at least to some extent on two differences between Croatian and Slovenian. First, Croatian *žena* means either ‘woman’ or ‘wife’, whereas Slovenian has a distinction between *žena* ‘wife’ and *ženska* ‘woman’. Secondly, Croatian has a three-way demonstrative system (‘this’ vs. ‘that’ vs. ‘yon’), in which the middle term—which is what occurs in row (b)—is semantically the least marked. Slovenian, on the other hand, has a two-way system, in which *tista* ‘that’—which occurs in row (d)—is the semantically marked term.

3.1. CLITIC CLUSTERS. Example (12) illustrates discrepancies between Croatian and Slovenian in the order of their clitics. Thus whereas the future auxiliary of Croatian precedes any pronominal clitics, the future auxiliary of Slovenian occurs at the end of a cluster. Also, in Croatian a reflexive clitic comes at the end of a string of pronominal clitics, but in Slovenian it comes at the beginning.

(12) a. [Cr] Ako ***ću*** ***vam*** ***se*** smijati, …
if I.will to.you self laugh
'If I laugh at you, …' (lit.: '…will laugh myself to you…')
b. [Sl] Če ***se*** ***vam*** ***bo*** posrečilo, …
if self to.you it.will succeed, …
'If you're successful, …' (lit.: 'if it will succeed itself to you…')

Learning a language such as Croatian or Slovenian involves being exposed to examples of clitic clusters of the language in question, and they constitute lexicalized combinations. The more exposure one has to particular combinations, the greater the degree of lexicalization and the more the combinations represent prefabricated expressions available for productive use. Longer strings occur in general less frequently than shorter strings and therefore have a lesser degree of lexicalization. However, producing a cluster of four clitics such as that of (13)—adapted from Golden and Sheppard 2000:194—does not require one to have heard it before, since a cluster such as this can be built up on the analogy of shorter sub-strings of it, which have been encountered more frequently. Thus even if the whole string does not exist as a prefabricated expression, it can be built up out of shorter strings which do exist as prefabricated expressions.

(13) [Sl] Peter ***se*** ***ji*** ***ga*** ***je*** napil
Peter self to.her it aux.past drunk
'Peter got drunk on her' (i.e., she was adversely affected by Peter getting drunk)

3.2. THE 'GIVEN' NATURE OF PRONOMINAL AND AUXILIARY CLITICS. The reason pronominal clitics often occur early in their clause is presumably that they represent 'given' as opposed to 'new' information. The speaker knows who or what the pronouns used refer to, and assumes also that their reference is clear to the listener. In this sense they are available at the outset of the structure in which they occur. Within an RNG framework, pronominal clitics can therefore be treated either as preceding the rest of the structure within which they occur or else as being simultaneous with the whole of it. Moreover, since not only pronouns have an 'antecedent' but also, e.g., past and future tense, in the form of a full specification of the time in question, auxiliary clitics may also be treated in a parallel way.

3.3. ENCLITIC VS. PROCLITIC. Clitics are prosodically deficient in that they are unaccented and need to be attached to a neighboring accented word, which either precedes them (in the case of enclitics) or follows them (in the case of proclitics). As far as Croatian and Pol-

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| | 2P-clitics ← | | → verb-clitics |
|---|---|---|---|
| enclitic use only | Croatian | Polish | |
| enclitic and proclitic use | Slovenian | | Macedonian<br>French |

***Table 4.*** *The intersection of the 2P-clitic vs. verb-clitic and the enclitic vs. proclitic distinctions in relation to five relevant languages.*

ish are concerned, the clitics that we have been concerned with are strictly enclitic, but the corresponding items in Slovenian may occur either as enclitics or as proclitics. This situation is summarized in **Table 4**, with the addition of two other relevant languages, Macedonian and French. In theory, it could be the case that original enclitics develop proclitic uses as a language progresses towards the stage of having verb-clitics rather than 2P clitics, and that this is how Macedonian and French came to allow proclitic uses. However, Polish has already progressed quite far towards the verb-clitic (and verb-affix) stage, but does not allow proclitic uses; and Slovenian is still at the 2P-clitic stage, but already allows proclitic uses. One is therefore forced to conclude that the distinction between enclitic and proclitic uses is simply independent of the distinction between 2P-clitics and verb-clitics. It might be worth investigating the general word-stress situation in the various languages for a possible correlation with the possibility of proclitic uses, but more research is required on this topic.

Clitics are sometimes represented (e.g., Halpern 1995:18) with a link '=' indicating the side on which they need to be attached to an accented word. Thus the enclitic corresponding to the Croatian accusative singular masculine full pronoun *njega* 'him' would be represented as *=ga*. Similarly, intonational unit boundaries are sometimes represented as '#' (e.g., O'Rourke 2004 *passim*). A sequence such as '# *=ga*' is then ruled out because there is no preceding accented word for the enclitic to be attached to within its own intonational unit. The corresponding clitic of Slovenian occurs sometimes as an enclitic and sometimes as a proclitic: *=ga* / *ga=*. Unlike the situation in Croatian, it can therefore immediately follow an intonational unit boundary, since in that position it occurs in its proclitic variant. (For further discussion see section 3.4.)

3.4. MORE DATA. While we have encountered examples above of interrupted complex constituents in both Polish (5)a and Slovenian (10) and (11), this phenomenon is a more predominant feature of Croatian—cf. (2)a, (7)a, (8)a, (9)a. However, one and the same structure in Croatian is sometimes interrupted and sometimes not. Consider in this connection (14) and (15), which both contain a phrase consisting of a numeral modified by a prepositional phrase, meaning 'one of them' or 'one of the home players (whom I won't…)'.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (14) | [Cr] | Jedan | ***ga*** | ***je*** | od | njih | udario | šakom |
| | | one | him | aux.past | of | them | hit | with.fist |

'One of them hit him with his fist'

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (15) | [Cr] | Jedan | od | domaćih | igrača | (kojeg | neću | imenovati | ali | koji …) | zbog |
| | | one | of | home | players | (whom | I.won't | name | but | who …) | because.of |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (15) | nekog | ***je*** | razloga | posebno | na | piku | imao | malog | Tina |
| | some | aux.past | reason | particularly | on | offense | had | little | Tino |

‘One of the home players (whom I won’t name but who…) for some reason particularly had it in for little Tino’

In (14) the clitics are attached to the numeral *jedan* ‘one’, even though the phrase *jedan od njih* ‘one of them’ is thereby interrupted. The comparable phrase in (15), *jedan od domaćih igrača (kojeg neću…)* ‘one of the home players (whom I won’t…)’ is not interrupted. Instead, the writer here interrupted a later complex constituent, the prepositional phrase *zbog nekog razloga* ‘for some reason’—but within its noun phrase constituent, since splitting the preposition from its object is not a possibility. There are other possible places for the enclitics in each of these examples. In (14) *ga je* could be attached to the participle *udario* ‘hit’, and in (15) *je* could be attached to the adverb *posebno* ‘particularly’. In both examples, the clitics are least likely to be inserted immediately following a particularly complex constituent, since such constituents are likely to be said as a single intonation unit, with the result that an intonational boundary and possibly a pause separates them from the continuation of the sentence. This is especially true of the complex noun phrase at the beginning of example (15)—*Jedan od domaćih igrača (kojeg neću imenovati ali koji…)* ‘one of the home players (whom I won’t name but who…)’, but it applies also to *zbog nekog razloga* ‘for some reason’ in the same example. The writer found it more acceptable to split this constituent with a clitic than to place the clitic after the constituent. The phrase *jedan od njih* ‘one of them’ in (14) is less complex than the previous two examples of complex constituents, but the writer still preferred to split it rather than place the clitics after it. Similar to (15) is example (16), in that it begins with two complex constituents, but here the writer preferred to interrupt neither of them. Instead he attached the clitic auxiliary *je* to the participle *bio* ‘been’, which is the third constituent of the sentence.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (16) | [Cr] | Zbog | nekog | nepoznatog | razloga | telekran | u | dnevnoj | sobi |
| | | because.of | some | unknown | reason | telescreen | in | living | room |

| | | | | |
|---|---|---|---|---|
| bio | ***je*** | na | neobičnom | mjestu |
| been | aux.past | at | unusual | place |

‘For some reason the telescreen in the living room was in an unusual position’

The above Croatian examples can be contrasted with the Slovenian examples (17)–(19).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (17) | [Sl] | Iz | neznanega | razloga | ***je*** | vedno | mislil, | da … |
| | | out.of | unknown | reason | aux.past | always | thought | that |

‘For some reason he had always thought that …’

There is no possibility in (17) of inserting the clitic *je* into the prepositional phrase *iz neznanega razloga* ‘for some reason’. (Whatever possibilities still exist in Slovenian for splitting complex constituents—cf. (10) and (11)—they do not include noun phrases consisting of an adjective and a noun, and certainly do not permit the separation of a preposition from its noun phrase object.) In addition, there is no need to delay *je* by attaching it as an enclitic to the end of the adverb *vedno* 'always', since it is most naturally attached to the beginning of *vedno* as a proclitic. The fact that there may be an intonational break and a pause after *razloga* is not problematic, given the dual enclitic/proclitic nature of the Slovenian clitics. Moreover, in (18) there is no problem with the fact that the main clause begins with the clitic cluster *vam bo*, since it may similarly be attached proclitically to the word *slovar* 'dictionary'. Finally, modern colloquial Slovenian allows utterance-initial occurrences of clitics, as in (19).

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (18) | [Sl] | Če | ne, | ***vam*** | ***bo*** | slovar | izročil | moj | služabnik |
| | | if | not | to.you | will | dictionary | hand.over | my | servant |

'If not, my servant will give you the dictionary'

| | | | |
|---|---|---|---|
| (19) | [Sl] | ***Se*** | vidimo! |
| | | self | we.see |

'See you!' (more accurately: 'We'll be seeing each other')

Summarizing the positions that clitics can occupy in clauses in Croatian, they include: (i) after the first word [= inside the first constituent whenever the first word is not a constituent on its own] (e.g., (2)a, (14)); (ii) after the first constituent (2)b; (iii) inside the second constituent (15); (iv) after the third constituent (16). For an example of 'after the second constituent', we can use the variant of (14) which attaches its clitics to the participle *udario* 'hit'. In whatever way one might wish to define 'strict 2P placement' for Croatian, there are many deviations from it. Looking now at Slovenian, the situation is rather simpler. Apart from relatively marginal structures such as those of examples (10) and (11), Slovenian clitics do not interrupt constituents. Thus when 2P is applied to Slovenian, it can largely be interpreted as 'after the first constituent, whether simple or complex'. Moreover, Slovenian clitics do not occur later than at 2P (cf. above discussion of (17)). The only deviation from 2P that needs to be acknowledged is occurrence in initial position—cf. (19). There are two ways of labeling the clitics in (18)—either they are in first position in the main clause or they are in second position within the sentence as a whole. In the latter case, the subordinate clause is being treated as an adverbial embedded within the structure of the main clause.

4. THE EMERGING PICTURE. The 'given' nature of pronominal and auxiliary clitics attracts them to the beginning of their clause; but if they are enclitics, they have to appear after the first word of the clause rather than in clause-initial position. The first word of the clause is sometimes a clause-constituent on its own but sometimes part of a complex clause constituent. In the latter case, we are dealing with an interrupted clause constituent.

In the course of time, the ability for clitics to interrupt complex constituents is lost. One factor in this process may be that interrupted constituents are more of a burden from a processing point of view and that for this reason they are gradually eliminated. But, given the central role of lexicalization in the present account of clitics, section 2.2 also raised the ques-

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| | | Search string | Meaning | Occurrences |
|---|---|---|---|---|
| a | | "bio je" | 'has been/was' | c. 2,260,000 |
| b | | "posebno je" | 'did particularly' | c. 205,000 |
| c | i | "udario ga je" | 'hit him' | c. 35,500 |
| | ii | "udario je" | '(did) hit' | c. 22,200 |

***Table 5.*** *Google frequencies (March 6, 2010) for particular Croatian expressions.*

tion whether lexicalization, too, might not be involved in the loss of interrupted constituents. At that stage, all that was suggested was that competing non-interrupted structures might involve a higher degree of lexicalization, and **Table 2** was invoked for some support. However, additional data considered in section 3.4 provide us with a more plausible lexicalization explanation. Consider, again, Croatian examples (14)—(16). In (14), the clitics *ga je* interrupt an initial complex noun phrase, rather than being placed in an alternative position that I mentioned, namely after the short second constituent: the participle *udario* 'hit'. In (15), the clitic *je* is inserted in the second of two complex constituents, the prepositional phrase *zbog nekog razloga* 'for some reason', rather than in my alternative location, after the short third constituent: the adverb *posebno* 'particularly'. In (16), on the other hand, the clitic *je* is placed after the short third constituent—the participle *bio* 'been'—rather than inserted into either of the first two complex constituents. Consider now also the Google-search frequency data on *udario*, *posebno* and *bio* given in **Table 5**. The most striking thing about this table is that the morpheme-string *bio je* 'has been/was' has a considerably higher frequency of occurrence than any of the other three strings. It seems reasonable, therefore, to conclude that it is lexicalized to a much greater degree, and therefore presumably more readily available as a prefabricated expression for use in speech production. This might be the reason why the writer of example (16) placed the clitic *je* after the participle *bio* rather than inserting it into either of the two preceding complex constituents. Moreover, this scenario provides a basis for a general explanation of the gradual loss of the ability to interrupt complex constituents. In section 2.2 it was implied that a constituent of the kind [A+clitic(s) B C] might give way to the structure [A B C+clitic(s)] because of a greater degree of lexicalization between C and the clitic(s) than between A and the clitic(s). However, if a combination of verb+clitic(s), occurring later in the clause, represents a prefabricated expression, then the competition in degree of lexicalization is between A+clitic(s) and verb+clitic(s) rather than between A+clitic(s) and C+clitic(s). It is the greater degree of lexicalization in the construction verb+clitic(s) that allows the clitic(s) to escape from the structure [A+clitic(s) B C], and a corresponding reduction in the incidence of interrupted constituents. The earliest combinations of *bio* + *je* were presumably in clause-initial position, but as this combination became more and more lexicalized, the prefabricated combination *bio je* was more and more available to occur later in a clause depending on the overall discourse structure of the clause. This is the sort of point that was made about (the history of) Polish in section 2.1.

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From the point of view of cognitively realistic synchronic analyses of clitics, what we are suggesting is that present-day Croatian is still affected by the 'givenness' of its clitics, together with the fact that (for whatever phonological reasons) the clitics are strictly enclitic. However, the positioning of the Croatian clitics is determined not only by these two factors but also by the degree of lexicalization at the present time in the kinds of combinations that we have been discussing.

Returning to the topic of interrupted constituents, it is worth reconsidering the extent to which they really involve a processing burden. Assuming that we have heard and stored a number of examples such as *moja je sestra* 'my sister has/did' in (20), then we have a pattern which allows us to create parallel sentences by substituting some other noun for *sestra* 'sister' (and, where necessary, changing the gender of *moja* 'my'). This process of analogical formation of interrupted structures increases the number of available split constituents, which is in fact unlimited. Moreover, the pattern can be applied not only in the first constituent of a clause but also by way of interrupting a later constituent. At the same time, though, the lexicalization facts discussed above in connection with the example of *bio je* 'has been/was' provide a mechanism whereby the occurrence of split constituents was gradually being reduced, at least until 1995 (cf. our discussion of Reinkowski's research in section 2.2).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (20) | [Cr] | Moja | ***je*** | sestra | izrasla | u | prekrasnu | djevojku |
| | | my | aux.past | sister | grown | into | very.beautiful | girl |
| | | 'My sister has grown into a very beautiful girl' | | | | | | |

Complex constituents such as the first constituent in (15) or the first two constituents in (16) are typically said as single intonation units, by way of signaling the fact that they are constituents and of showing how they fit into the discourse structure of the sentence. This then rules out the possibility, in Croatian, of allowing a clitic to immediately follow the constituents in question. As implied in section 3.3, the intonation unit boundary prevents speakers from attaching a clitic to the final word of the preceding intonation unit; hence the need for speakers to accommodate the clitics elsewhere. We saw, though, that the situation is quite different in Slovenian, because the clitics have dual enclitic or proclitic status. They can therefore immediately follow an intonation unit boundary and be attached, proclitically, to a following accented word.

I will conclude with a very brief reference to work on clitics within other frameworks, first that of Optimality Theory (OT). Analyses of the clitics of Serbo-Croatian and Slovenian within the framework of OT—e.g., Anderson 2000, O'Rourke 2004—give recognition to the fact that the clitics with which we are concerned occur near the beginning of their domain, by positing a constraint such as Edgemost or Align, with 'left' as one parameter setting, by way of stating that the clitics should occupy the leftmost position within their domain. The domain is sometimes argued to be syntactic and sometimes phonological (or 'prosodic'); and if the clitics do not occur in absolute initial position within their domain—which they never do in Serbo-Croatian—this fact is handled by positing an additional higher-ranking constraint to the effect that the clitics have to be Non-Initial within their domain. This latter constraint takes precedence over Edgemost or Align.

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What is common to the two approaches—my RNG approach and OT—is that the positioning of clitics depends on the interaction of, and competition between, various separate constraints. A minor criticism I might make of the OT approach is that it tends to take the various constraints as simply existing, without trying to explain why they exist. However, the main criticism I would make is that it does not recognize the relevance of lexicalization.

The largest volume of work on clitics has been carried out within the framework of generative grammar, e.g., its Minimalist version as applied by Franks and King (2000) to the whole family of Slavic languages. As for 2P-clitic languages, they assume that, in the underlying structure of sentences, clitic object pronouns occur in the same position that would be occupied by a corresponding full noun phrase object. Much of the syntactic description of clitics then consists in characterizing the mechanism by which the clitics "move" to their surface positions. They invoke a whole series of 'functional head' landing-sites, to which the clitics move "for case-checking reasons" (2000:318). For instance, (indirect object) dative clitics move to the indirect object agreement slot (AgrIO°); (direct object) accusative clitics move to the direct object agreement slot (AgrO°); and reflexive clitics move to the position of the head of a reflexive phrase (Ref°). From a RNG point of view, one's first reaction is along the following lines. When a speaker hears a sentence with clitics in it, they occur in the position that they occupy within the chain of syllables constituting the utterance; and when he/she produces a sentence with clitics in it, the same is true. Furthermore, it seems unlikely that, in the actual comprehension or production of a sentence containing clitics, the clitics "move" from one position in its structure to another—for case-checking, or any other reasons. However, it needs to be said, with regard, e.g., to the pronoun *ga* 'him' in our example (14), that as well as being near the front of the sentence, because its reference is 'given', it is also related to *udariti* 'to hit' as its direct object. Maybe, therefore, from the point of view of the speech comprehension and production processes, "movement" in generative grammar is a metaphor for multiple dependencies, as in 'raising' examples such as *I ordered Ed to remove Bob from the room*, where 'Ed' is 'recipient' with respect to the verb *order* and 'agent' in relation to *remove*. (For a RNG analysis of such data see Sullivan 1980.) Assuming that this reinterpretation of "movement" is feasible, I would be left with the same criticism as of OT, namely that generative grammar does not acknowledge the relevance of lexicalization.

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# RECEPTORS AND SYLLABLE TRAJECTORIES

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**Abstract:** The present study aims at discovering the emergence of syllabic receptors appealing solely to phonotactic information in a given language. Our work focuses on French phonotactics. The research exploits a Self-Organizing Map (SOM) to create a knowledge representation of receptors which become specifically tuned to syllabic behaviors through an unsupervised learning protocol. Our simulations highlight not only syllable (and syllabification) modeling in quantitative terms (seen as the emergent by-product of frequency and phonotactic regularities), but other non-trivial aspects of the implicit phonotactic knowledge that speakers exhibit in a given language.

**Keywords**: Syllable, French, self-organization, phonotactics, learning

**Languages:** French

INTEREST IN PHONOTACTICS and the syllable is relatively recent in phonological studies. Maybe due to the strong theoretical impact of the transformational approach developed by the generativist school (Chomsky & Halle 1968), with its focus on minimal phonological units (i.e., distinctive features) and the range of derivational operations needed for their phonetic realization, the notion of syllable has only gradually attained the status of an object of serious study. With a dramatic shift in perspective, the syllable has thus come to play a key role in autosegmental representation (Khan 1976, Goldsmith 1992). This has produced a somewhat paradoxical effect: the syllable was treated at a level above the linear phonemic chain, but at the same time, it remained more basic than the linear phonemic chain, being the main engine of derivational processes.

The renewed interest in phonotactic restrictions (Dziubalska-Kolaczyk 2005, Bertinetto 2001, Laks 1995) has recently suggested that the syllable should be regarded as a derived phenomenon (hence its epiphenomenal nature), resulting from the phonotactic organization of language, rather than being itself at the origin of any combinatorial restrictions. These issues have lately become the object of pioneering experimental investigations in several fields, such as psycholinguistics, computational modeling and neuro-imaging (Näätänen et al. 1997).

Phonotactics appears crucial for first language phonological acquisition. By their twelfth month of life, infants have learnt to deal with speech stream segmentation and are able to recover word and phrase units. Eight-month-old infants can segment continuous

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streams of assembled syllables to the point that they can segment tri-syllabic words having high transition probabilities between adjacent syllables and low transition probabilities between words (Saffran, Aslin & Newport 1996). Similar results demonstrate that transition probabilities, in the absence of any other cues, make parsing of a continuous speech stream possible.

Several studies, by means of various experimental tasks, have demonstrated that speakers are intuitively sensitive to 'syllabic entities'. The general framework is quite fragmentary, so that it is still unclear what is the processing level at which syllabic entities emerge with relative salience (Bertinetto 1996). Some scholars have proposed that the function of the syllable has to be related to the prosodic typology of the language (Cutler 1997). The syllable would thus play an important role for processing in syllable-timed languages, but only a minor role in stress-timed languages. Such a rhythmic differentiation should however be conceived of as a result of specific, phonotactically-based articulatory constraints (Bertinetto 1989). From this point of view, the origin of cross-linguistic differences should not be related to diverging phonological roles of the syllable, but rather to the fact that, in the production mechanism, speakers of different languages make use of different co-articulatory strategies, with tangible consequences on segmentation and parsing.

Among linguists and psycholinguists, the view that the syllable is an epiphenomenal self-organizing structure that emerges as a result of the complex phonotactic interactions operating in a given language is not completely new (Ohala & Kawasaki-Fukumori 1997, Dressler & Dziubalska-Kolaczyk 1994). Syllable constituents evolve during processing as preferential aggregations whose stability differs from language to language. In recent times, the assumption that syllable parsing is the result of an inferential process, in which a major role is played by knowledge of word phonotactics, has produced some interesting predictions about the perceptual salience of prosodic boundaries.

1. THE PROBLEM. Phonotactic regularities play an important role in syllabification and in sensitivity to syllables in general (Pacton et al. 2001). These regularities are not explicit in terms of rules or instructions; rather, they are the result of statistical (implicit) learning by the speaker, whose sensitivity to local conditions of phonotactic constraints increases during exposure to phonology data (Treiman & Zukowski 1996).

This implicit knowledge allows speakers to judge the well-formedness of specific syllable structures or to make generalization strategies about new syllables, i.e. syllables not yet perceived, on the basis of the phonological competence acquired.

In the Natural Language Processing (NLP) approach, the syllable and, more specifically, the process of syllabification (i.e., the automatic detection of syllabic boundaries from a unique sequence of phonetic/phonological sounds), has received massive attention from scholars and researchers.

Several approaches in machine learning have been developed for the automatic detection of syllabic boundaries: finite-state transducers (Kiraz & Möbius 1998), probabilistic context-free grammars (PCFGs, Müller 2002), or decision trees for classification (van den Bosch et al. 1998). These approaches, in fact, have a purely engineering interest (as implementations in text-to-speech) and are of little utility from the (psycho-)linguistic point of view.

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Few contributions are based on the notion of implicit phonotactic knowledge (already experimentally demonstrated, Pacton et al. 2002), in which the syllable is considered as the collateral and emergent product of that knowledge.

It is interesting for our aims to simulate computationally the gradual development of that competence in terms of local micro-constraints of phonological sequences and analyze how phonotactic competence interacts with the syllable by means of phonotactic constraints.

Our framework exploits the unsupervised learning protocol in which syllabic behaviors should emerge gradually from phonotactic knowledge of a given language. An essential property of an unsupervised learning protocol is that no pre-model or external parameters are defined *a priori*. After training, the learner proposes a suitable model (with its values and parameters) that explains data which have been previously learned.

In this paper we attempt to extract syllable-motivated behaviors from a phonological input specifying the phonotactic environment of vowels taken from a representative corpus. The works aims to highlight not only syllable (and syllabification) modeling in quantitative terms, but other non-trivial aspects of the implicit phonotactic knowledge that speakers exhibit in a given language.

2. SIMULATIONS. In our framework a syllable is considered as a temporal trajectory of phonological chunks derived from local phonotactic constraints gradually learned by the speaker. We perform a gradual and incremental learning of French words phonologically encoded by means of an unsupervised algorithm, the so-called Self Organizing Map (Kohonen 2002), in order to highlight syllabic behavior and provide a quantitative modeling of phonotactics legality. In particular the syllable structures are computationally reproduced by means of matching and adaptation phases of artificial receptors which are tuned to the phonotactic constraints of the given language in a redundant fashion.

Our approach is based on the assumption that invariant regularities in a language (such as phonotactic regularities) suffice to derive universal generalizations concerning basic syllabic behavior, without an *a priori* characterization (in computational terms) and interpretation (in linguistic terms) of what a syllable structure is.

2.1. THE DATA. We used Lexique 3 (New 2006) to design a representative French corpus of words phonologically transcribed. The corpus is made up of 190,000 word-tokens and 8,000 word-types. We distinguished 34 phonemes: 3 glides, 14 vowels and 17 consonants. In our encoding, word boundaries (#) are also marked as a distinctive phoneme.

Each phonological segment is encoded by using a distributed binary representation defining the place/manner of articulation. No information about the sonority (inherent and/or derived) of the phonemes is defined *a priori* or surreptitiously represented in the information to be acquired. A distinctive vector encoding is also adopted for the word boundary phoneme.

Given our set of 34 phonemes, the input vectors for the learning protocol were created using a sliding window encoding: every vowel is coded together with its left and right phonotactic context according to a window span of four phonemes (two on the left and two on right) with respect to the focus position occupied by the vowel. This methodology allows an individual vowel to be computed with its complete phonological environment during the training phase.

2.2. THE ALGORITHM: SELF-ORGANIZING MAPS. A Self-Organizing Map (SOM) (Kohonen 2002) simulates data self-organisation by structuring input knowledge on a (generally) two-dimensional grid of neurons (*receptors*), whose activation values can be inspected by the researcher both instantaneously and through time.

In technical terms, the SOM projects inputs, represented as data points of an *n*-dimensional input space, onto a generally *two*-dimensional output space (the *receptors* map) where similar input tokens are mapped onto nearby output units.

Each output unit in the map, a so-called *receptor*, is associated with a distinct prototype vector, whose dimensionality is equal to the dimensionality of input vectors. A prototype vector is an approximate memory trace of recurring inputs, and plays the role of linking its corresponding output unit to a position in the input space. Accordingly, each output unit occupies two positions: one in the input space (through its prototype vector) and one in the output space (its co-ordinates on the map).

The property of dimensionality reduction (from high- to low-dimensional representations) associated with preservation of the original data topology, make the SOM an interesting clustering method for data: similar inputs tend to be mapped to nearby nodes on the SOM and reflect the commonality of some property

The clusters are automatically derived from the metric relationships between the input items; no “supervision” is needed, i.e. no information about input-output relations is defined *a priori*. Each receptor in the map is associated with a distinct prototype vector $\boldsymbol{m_i}$, whose dimensionality is equal to the dimensionality of input vector $\boldsymbol{x}$.

The learning protocol proceeds by first initializing the synaptic strengths (or connection weights) of the neurons in the map by assigning values picked from a random or uniform distribution. This point is crucial because no *a priori* order or knowledge is imposed onto the map.

After initialization, the self-organization process involves two essential steps:

- **Step 1**: the input data vector $\boldsymbol{x}$ is compared to the prototype vectors $\boldsymbol{m_i}$ and the Best Match Unit (BMU) $\boldsymbol{m_c}$ is located.
- **Step 2**: the neurons within the neighborhood $\boldsymbol{h_{ci}}$ of $\boldsymbol{c}$ are tuned to the input vector $x$.

These steps are repeated for the entire training corpus.

In Step 1, the BMU to the input vector is found. The BMU is determined using the smallest Euclidian distance function, defined as $\| \boldsymbol{x} - \boldsymbol{m_i} \|$. The BMU, $\boldsymbol{m_c}$, is found using the following equation:

(1) $$\| x - m_c \| = min \{ \| x - m_i \| \}$$

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Once the BMU is found, Step 2 initiates. This is the learning step in which the map surrounding neuron ***c*** is adjusted towards the input data vector. Neurons within a specified geometric distance, $\boldsymbol{h_{ci}}$, activate each other and learn something from the same input vector $x$. This has a smoothing effect on the weight vectors in its neighborhood. The number of neurons affected depends upon the neighborhood function. The learning algorithm is defined as:

$$(2) \qquad m_i(t+1) = m_i(t) + h_{ci}(t)[x(t) - m_i(t)]$$

where $\boldsymbol{t = 0, 1, 2, \ldots}$ is the discrete-time coordinate. The function $\boldsymbol{h_{ci}}$ is the neighborhood of the winning neuron ***c***, and acts as the so-called *neighborhood function* that is a smoothing kernel defined over the lattice points. The function $\boldsymbol{h_{ci}}$ is usually defined as a Gaussian function:

$$(3) \qquad h_{ci} = \alpha(t) \cdot exp\left(-\frac{\|r_c - r_i\|^2}{2\sigma^2(t)}\right)$$

where $\boldsymbol{\alpha(t)}$ is a learning rate and the parameter $\boldsymbol{\sigma(t)}$ defines the radius of the neighborhood. In the original algorithm (Kohonen 2002), both $\boldsymbol{\alpha(t)}$ and $\boldsymbol{\sigma(t)}$ are monotonically decreasing functions of time.

Generally the SOM is trained in two phases. The first phase is a rough training of the map in which the system is allowed to learn a lot from each data vector. Therefore, learning rate and radius are high in this first phase. The second phase is a fine-tuning phase, in which the SOM learns less at a time, but data input are introduced to the map more times. Thus, learning rate and radius are lower than in the first phase, but the training length is much higher.

3.3. U-MATRIX. The distance between the neighboring codebook vectors highlights different cluster regions in the map, which is thus a useful visualization tool. The distance for each neuron is the average distance between neighboring codebook vectors. Neurons at the edges of the map have fewer neighbors.

The average of the distance to the nearest neighbors is called unified distance and the matrix of these values for all neurons is called *U-matrix* (Ultsch & Siemon 1990). In a U-matrix representation, the distance between adjacent neurons is calculated and presented with different colorings between adjacent positions on the map.

Dark (blue) colorings highlight areas of the map whose units react consistently to the same stimuli. White (red) coloring between output units, on the other hand, corresponds to a large distance (a gap) between their corresponding receptors. In short, dark areas can be viewed as clusters, and white areas as chaotically reacting cluster separators.

### 3. RESULTS.

3.1. SYLLABLES AS A TRAJECTORIES ON THE MAP. Self-organisation in a SOM is an emergent property, based on local (both in time and space) principles of prototype vector adaptation. At the outset, the map is a *tabula rasa* (i.e., it has no notion whatsoever of French phonotactic knowledge). This has two implications. First, before training sets in, output units are associated with randomly initialised sequences of phonemes (centred around a vowel). Secondly, prototype vectors are randomly associated with map receptors, so that two contiguous receptors on the map may be sensitive to very different stimuli.

By repeated exposure to phonological sequences sampled from our training corpus, the map grid accommodates increasingly faithful memory traces of the most familiar phonotactic patterns (in which the vowels always remain in focus position) encountered in the training input. This is a typical process of specialization. Due to specialization, receptors tend to be more highly activated by more frequent input stimuli.

The trend towards increasingly more specialized receptors, however, is counterbalanced by another dynamic factor: *inter-stimulus* competition. There are obviously more vowels (with their respective consonant environments) in a language than there are nodes on a SOM grid. Hence we expect many similar vowel phonotactic patterns to compete for the same memory trace(s). Competition gets harder as more and more stimuli are shown on the map. Similar stimuli are attracted by the receptors and, due to the superpositional nature of memory representations, tend to leave a more abstract memory trace on the map.

The U-Matrix in **Figure 1** shows the organization of the sequences of phonemes considered as input to the system. Dark-blue zones define classes of the same phonotactic environments and light-blue/yellow/green zones mean areas of no organization.

The SOM has mapped the phonematic sequences in contiguous entrenched areas in which map receptors are specialized to spatially represent the vowel of each word (present in the training set) and its phonotactic context.

The location of the phonotactic contexts tends to become spatially ordered as if some meaningful coordinate system for different input features were being created over the map. In this perspective the location or coordinates of a receptor in the map in **Figure 1** correspond to a particular domain of the input patterns.

Contexts representing CV-type are mostly spaced at the top and bottom of the map in which receptors are highly sensitive to the particular syllable type. This receptivity thus reflects the real distribution of that syllable type which is highly frequent in our training set.

More complex syllabic clusters (such as the CCV type) are mostly grouped on the middle-right part of the SOM, adjacent to some CVC types.

The fact that the same syllable type classes are placed in different zones of the map is a consequence of the varying extent of the words in terms of the number of phonemes. For this reason the SOM should perform a spatial arrangement of the data comprising all the variable phonotactic context defined by the same syllable type.

We can test the syllabic validity of these topological clusters by forcing the system to generalize unseen words (i.e., words not present in the training corpus), by searching the BMU (best matching units) corresponding to phonotactic windows for these test words. For this purpose we have designed a new list of words including different syllable types in French.

**Figure 1** displays the BMU of some words used in this phase of testing.

The passage from one phonotactic/syllabic context to another (with the vowel always in focus position) is marked out by a trajectory spanning the temporal extent of the word.

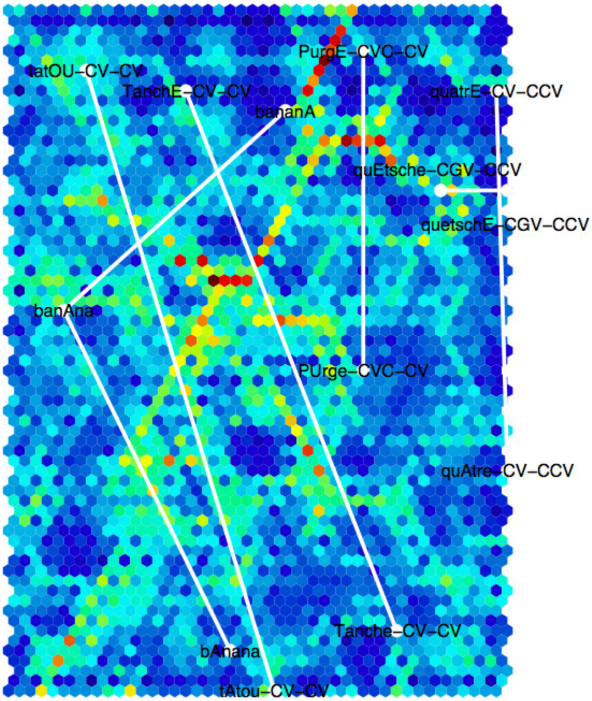

***Figure 1.*** *Some syllabic trajectories displayed on the SOM at the end of the training. Each trajectory is labeled by its word together with the syllable type. The vowels in focus position are represented in capitals.*

Although the number of phonemes was different, the SOM seems to exhibit a coherent mapping for the unseen words, placing their phonotactic contexts in the zone defining the correct syllable structure. This fact is most clear for CV-type syllable words (an example of which can be seen in **Figure 1**.).

Clearly, the choice of a five segment window is only one of the possible alternatives. This length was selected in an attempt to capture (almost) all the phonotactic information needed for defining the syllable. Other shorter or longer windows could have been used, and more dynamic ways of setting the window span are currently being entertained.

The final syllable knowledge is the ultimate state of an incremental learning process in which the receptors dynamically attract the phonotactic information and enable the data to be spatially arranged.

**Figure 2** reports on the behavior of our map, monitored through different phases of acquisition of the 'phonotactic windows' of the corpus.

Self-organization is a dynamic process whereby i) output units tend to consistently become more reactive to classes of input data, and ii) vector prototypes which are adjacent in the input space tend to cluster in topologically connected subareas of the map.

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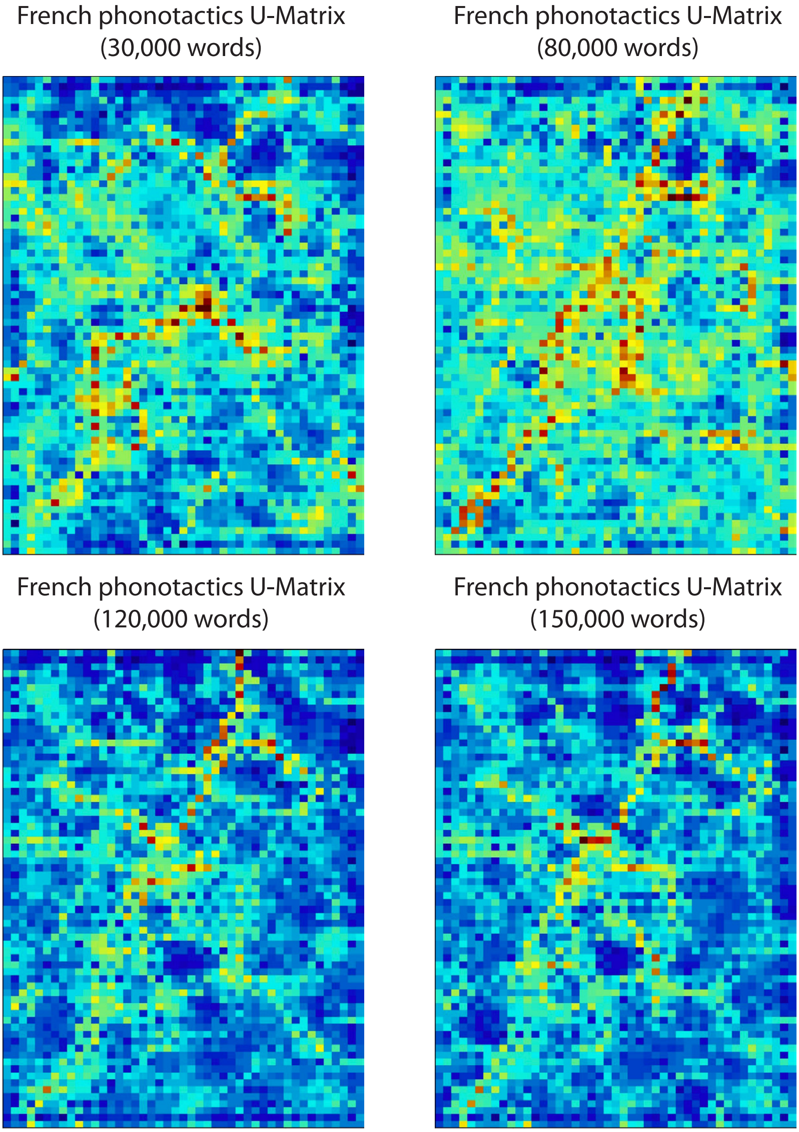

***Figure 2.*** *Incremental learning and emergence of syllabic clusters*

At the outset, the map is a *tabula rasa*, i.e. it has no notion whatsoever of French phonotactic/syllabic phonology. This has two implications. First, before training sets in, output units are associated with randomly initialised sequences of phonemes. Secondly, receptors are randomly associated with map neurons, so that two contiguous neurons on the map may be sensitive to very different stimulus patterns.

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**Figure 2** shows that, during a gradual and incremental learning cycle, phonotactic/syllabic clusters are thinly scattered and reduced in size. During the exposure to linguistic data the phonotactic information grows (from 80,000 words to 150,000 words); however, the principles of phonotactic/syllabic organization allow for a more compact spatial arrangement and thus the system exhibits a structured knowledge in which clusters are well-defined and more entrenched on the map. This is graphically represented by means of dark colourings that highlight areas of the map whose receptors react consistently to the same phonotactic information.

The topographical formation on the map of clusters of CV-types is also a straightforward and obvious consequence of the entrenchment-by-frequency effect of the corpus.

3.2. PHONOTACTIC ACCEPTABILITY. The faithful phonotactic adaptation, by means of the SOM receptors, reflects the robustness of the knowledge learned in the map.

In order to test the range of adaptation for phonotactic contexts, we calculate the quantization error (QE) for some representative words. In particular, the QE represents a value concerning the topographic map resolution and defines the average distance between each phonotactic context and its BMU on the map. A close fit between the phonotactic window given as input and the corresponding map BMU should provide low values of QE and denote 'phonotactic acceptability' for that phonotactic context. For different learning phases, we calculate the QE of the map in response to some unseen words. QEs seem to decrease significantly during the last phase of learning when the SOM knowledge appears well-structured and the clusters have properly emerged (due to the incremental input).

In confirmation of the receptivity of neurons for French phonotactics, we report high values of QE in response to non-French phonotactics words such as the Finnish word \kinkku\ 'ham' (see **Figure 3**, overleaf).

4. CONCLUSIONS. Our simulations highlight not only the phonotactic modeling in quantitative terms (seen as the emergent by-product of frequency and phonotactic regularities), but other non-trivial aspects of the implicit phonotactic knowledge that speakers exhibit in a given language. Phonotactic regularities play a crucial role in defining syllabic behavior and syllable structures in general. These regularities do not appear to be explicit in terms of rules or instructions; instead, they are the result of a statistical implicit learning by the speaker, whose recording sensitivity to local conditions of phonotactic constraints increases during the exposure to phonology data.

In particular the paper has offered a series of snapshots of the dynamic behavior of a SOM taken in different phases of acquisition of French phonotactic contexts. The snapshots consistently portray the emergence of global ordering constraints on receptor traces of phonotactic contexts, at different levels of linguistic granularity, with a syllabic consistency. Our approach is based on the assumption that invariant regularities in a language (such as phonotactic regularities) are meaningful enough to derive universal generalizations concerning syllable behavior, without an *a priori* knowledge of the nature of the syllable.

The study aims precisely at quantitative analysis of the knowledge and the processing mechanisms involved in the formation and representation of the syllable as a temporal

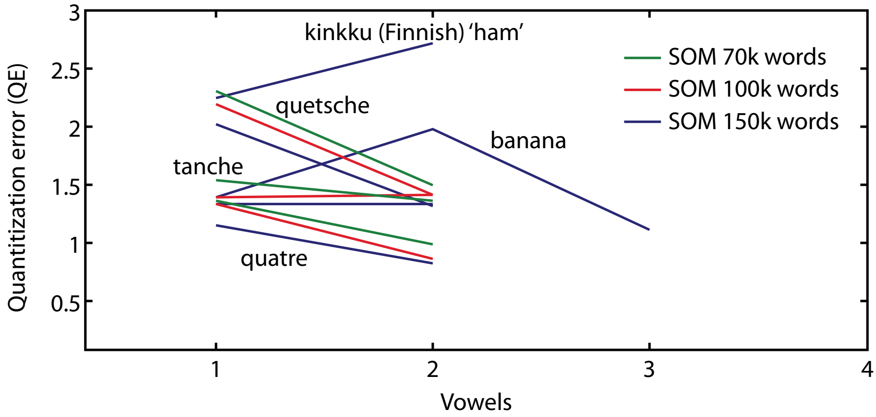

***Figure 3.*** *Quantization error (QE) for French words and non-French word (such as the Finnish word \kinkku\ 'ham').*

trajectory of phonological units that are perceived and produced by the speaker in French. Our computational approach appeals solely to distributional information of the linguistic data and adopts a usage-based framework for its purposes. We try to define a syllable structure computationally by means of an adaptation process of neural receptors with respect to phonotactic contexts in French considered as input items.

In this theoretical-methodological assumption, the plausibility of unseen phonotactic sequences is defined by the coefficients of adaptation exhibited by receptor units of the grid map. In this sense, by forcing generalization processes on the basis of the knowledge already acquired we could define a syllable trajectory for the cases that are doubtful and not so deterministic in terms of syllabic behavior.

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# THE GOVERNOR GENERAL'S LITERARY TRANSLATION AWARDS: TOWARD A TRANSLATION EVALUATION GRID

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**Abstract**: The quality assessment of literary translations, and especially of the winners of the Governor General's Literary Translation Award (French to English), is discussed. The author, who has served as a jury member for the GG's Literary Translation Award in 2006 and 2008, undertakes to establish a translation evaluation grid consisting of the concepts of literary value, quality and accuracy, and 12 questions intended to establish the quality of a literary translation, of winners of the GG's in particular, and then of any literary translation, in general. Works by Rodriguez, Meschonnic, Plassard and Mossop, among others, are used as premises on which the evaluation grid is built.

**Keywords:** literary translation, the Governor General's Literary Translation Awards, quality assessment of literary translations

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My work as a jury member for the Governor General's Literary Translation Awards (French to English) began in 2006. I was again chosen to serve on the jury in 2008. Based on practical and theoretical premises, my hypothesis regarding the evaluation of literary translations is that one can undertake such an evaluation in fairly objective terms, else how can consensus, such as that required for selecting the best translation among the annual entries for the Governor General's Literary Translation Awards, be reached. Literary Translation was added as a category of the awards (which are known in the Canadian literary world as the GG's) and which are thus described on the Canada Council for the Arts Website:

> The Governor General's Literary Awards, Canada's most prestigious literary awards, are given annually to the best English-language and the best French-language books. They are awarded in each of the seven categories: fiction, non-fiction, poetry, drama, children's literature (text), children's literature (illustration), and translation.

The Canada Council for the Arts funds, administers and promotes the Governor General's Literary Awards. The value of each award is $25,000.

With the prospect of a high reward, the impetus to produce a winning translation is strong. But what about judging the awards. Are evaluations made objectively or subjectively, and what makes a winning translation? Simply put, can an evaluation grid be applied

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to literary translations in such a way that they can be analysed and evaluated as objectively as possible? If not, then how could 3 very different specialists choose the same translation as the best? In this paper, I first describe the equation **accuracy + literary value = quality**, then present the theoretical premises of my work. Following that, I present and comment on the 12 questions I use to evaluate literary translations in general and the entries in the GG's competition in particular, and finally, I draw some conclusions regarding the possibility of evaluating literary translations.

1. ACCURACY + LITERARY VALUE = QUALITY. The Canada Council for the Arts, which oversees the GG's competition, insists that a quality assessment juror is to focus on the literary value of the translations, then the accuracy of the translations, and finally the quality of the translations. Mossop (2007) describes accuracy as the most important implied need of a translation, and also defines accuracy as the translation of the message of the text; but accuracy must also be defined as the equivalent translation of the level(s) of language, not only the message(s) of the text but also the meanings of that text, the connotations of the source-text, and so on (see Wilson 2009). Secondly, literary value, as described by Kant (2004; see also 2005) and his disciples, is defined as the aesthetic pleasure derived from deciphering a literary text. This aesthetic pleasure is paramount in literary translation, as a translation must contain literary value and present an equivalent of the literary figures and effects found in the source-text. And finally, quality is described as "the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs" (ISO 8402).

2. TOWARD A THESIS. Although Mossop deals strictly with technical translation, he poses the right question with regard to literary translation as well, when he notes:

> It is probably wishful thinking to imagine that a translation can be both extremely readable and extremely accurate. At the higher levels of precision, a degree of readability is inevitably sacrificed, while at the higher levels of reader-friendliness, accuracy must suffer (2007: 127).

This division raises the age-old question of free translation vs. literal translation, which I describe as demonstrating fluency and flow (freedom) in the target language vs. faithfulness to the source-text. Indeed, too much faithfulness in translating a phrase can sometimes produce a barely legible text, too literal a translation, and too much freedom can sometimes produce a target text that barely holds any resemblance at all to its source-text. Yet, I have dealt with expertly executed target texts that present at once a very high level of both faithfulness and freedom. One should note, however, that literary translation, perhaps more than any other kind of translation, should be opaque, and should not be too literal, if one accepts the definition of a calque as: "a word or phrase borrowed from another language by literal, word-for-word or root-for-root translation" (see Wikipedia). In most cases, translations that are too literal are to be avoided, at least in literary translation, as they must be faithful to the original text, yet fluent in the target language. In my experience, faithful-

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ness to the source-text and freedom and fluidity in the target language are not mutually exclusive, and a balance must be established and maintained between the two objectives.

Plassard (2007:233) notes that a translation is said to be "successful" if it can replace the original text, and if it "makes a text". Therefore, the target text has to be fluent, while still remaining faithful enough to the source-text to be able to replace it. Plassard also notes a number of factors that a translation must maintain. For her, a translation must also fulfill the requirements of coherence (the internal logic of the translation), cohesion (the linguistic quality of a text ensured by grammatical and lexical elements that link the words of a sentence together and each sentence to the next), the content or information of the original text, acceptability and priority given to the genre (in the target-text being both equivalent to the source-text and constituting a new text). Wilson (2009) notes that the target-text must present a linguistic and conceptual equivalent of its source-text, as the text is composed of words (vocabulary) strung together (syntax), while those words also evoke, in the mind of the target-text reader, connotations, images, axiological information, levels of language, meaning(s) and a message equivalent to those presented in the source-text.

Meschonnic (1999) presents a detailed description of what a good translation should do and contain. That description notes that a good translation does what the source-text does, not only in fulfilling the social function of representation (literature), but also in its semiotic and semantic functioning (85). Meschonnic (87) describes the [literary] translator as being trained to erase every trace of the text's origin as a translation, as the literary translator seeks to create a natural sounding text. He then underlines the translator's faithfulness, which for him is first and foremost their faithfulness to the dualism of form and meaning, with its mythical effects, the political primacy of language, in the instrumentalism of the sign, and style conceived as different from ordinary language (89). Thus, literary translations must, as literature, represent and present equivalent words, syntax and constructions that promote that representation.

Rodriguez (2007) claims that her research demonstrates that a single model cannot be used to assess the quality of literary translations. Yet, her study demonstrates precisely that it can, and her model for such an evaluation seems strongly convincing and indeed useful. Her model takes into account reductions (losses) and additions (supplementation or gains), and also uses Vinay & Darbelnet's (1977) seven translation procedures for measuring the quality of the literary translation that she examined. I rely heavily on her model in creating my evaluation grid, and I also draw from Kant's theory of aesthetics (see also Jauss 1978) to measure the literary value of the literary translations that I evaluate. This study is both possible, as it has been done before, and predictable, as Rodriguez' work demonstrates its effectiveness through the in-depth study that she presents, while it has not yet been used in many other contexts. My work is also original, as it contains an element of aesthetics to measure literary value, and as an evaluation grid has not yet been applied to an in-depth examination of winners of the GG's translation award.

3. JURORS AS QUALITY ASSESSORS. In the quality assessment of the entries in the GG's competition, which include all the literary translations published in Canada during the year preceding each competition, the jurors are the authority. There are several inherent

difficulties for the jury. First, what constitutes a natural sounding text may differ from one juror to the next, or between a given translator and a juror. In order to make that point less of an issue, there are three jurors for each category, and they are skilled literary translators and/or literary translation critics. Next, the jury members must have a grasp of different literary styles and a feel for both the target and source languages and for language use in both cultures. Meschonnic (1999), among others, holds that translators of novels must also be novelists themselves. Therefore, quality assessment should be executed by quality assessors. Finally, the jurors must have a firm grasp of the analysis, interpretation and reformulation of novels, and they are usually comparing a given translation to an ideal translation of the same source text in their minds (see Mossop 2007).

4. QUESTIONS FOR EVALUATING LITERARY TRANSLATIONS. An element of the tool that I developed for evaluating literary translations consists of 12 questions which, when applied in order and graded from 1 to 10, produce effective results. I used an earlier form of these questions in evaluating the GG's entries. I am grateful to the editors of *LACUS Forum 36* for the adjustments made to the grid.

1. How accurate is the translation and what is its literary value?
2. Does it read well, and not like a stilted translation?
3. Has the translator successfully tapped into the original author's voice?
4. Does the translation demonstrate the required "rhythm, rhyme and harmony" (from the song "Drift Away") of the original?
5. Does the translated text conjure up the same images in the reader's mind's eye as the source text?
6. Has the translator made the translation "sing"? (From "Alors la traduction chantera", Henri Meschonnic, 1986.)
7. Has the translator captured the spirit and not just the letter of the original text?
8. Does the translation constitute a new work in the target language? (Not just was the translation executed recently, but are its ideas, style, etc. new?)
9. Does the translation constitute a worthy addition to the target language's library of literature in translation?
10. How skilled is the translator, and how good are the translator's techniques?
11. What is the level of reader interest in the translation? (At this point the evaluator is the Über reader.)
12. What is the level of difficulty of translating the source text? (when comparing two or more literary translations and their source texts to each other).

Questions 1 through 3 are concerned with the passage of the source-text into the target-text, and with the kind of equivalence the target-text establishes between itself and the source-text (partial vs. full equivalence, linguistic vs. linguistic and conceptual, etc.), and therefore with whether the translation makes a text" (Plassard 2007). Questions 4 through 7 focus on the spirit and the letter of the source-text and whether the style and revivification of the spirit of the source-text have been captured and achieved. Questions 8 and 9 focus on how well the target-text replaces the original text. Questions 10 and 12 focus on the translator's skills and the level of quality achieved in their literary translation, and question 11 deals with the reader's reception of the translation. Question 5 is a very important consideration in any translation, and subsumes questions 1-3, 6 and, to some extent, 10. Taken together, the questions evaluate the translation as a target-text that must stand on its own, while presenting as full an equivalence of the source text as possible.

5. CONCLUSION. Contrary to Rodriguez (2007), who believes that she has proved that a number of literary translations cannot be evaluated in a similar fashion, my research and experience with the GG's has shown that indeed they can be, and a large part of the proof is that such an evaluation is actually done yearly in selecting winners of the GG's. That is a somewhat simplistic response, however, as just because it exists is not always the indicator that a uniform evaluation of literary translations is possible. Nonetheless, literary translations can be evaluated in terms of the linguistic elements they contain, and in terms of the reductions, additions and mistakes they contain (see Rodriguez 2007), in an effort to present a target text equivalent to the source text. Literary value, or the aesthetic value of a literary work, can be assessed in terms of quality, and in literary translation this value can be described as the level of quality of the finished product, which is the translation. It also becomes increasingly difficult to present equivalent images, concepts and connotations as those elements become more culturally bound and hence, more difficult to translate, and for that reason, equivalence is a dynamic concept, but it is also possible, as it is done and can be described.

The value of the GG's in the literary culture of Canada cannot be overlooked. The winners are very well compensated (currently at $25,000 per book per year) and the value of seeking the highest quality in the creation of literary translations within Canada's literary culture must be preserved. Finally, the celebration of Canada's bilingual nature and linguistic duality, and witnessing the two solitudes communicate through highly skilled literary translators is both an honour and a pleasure, akin to being invited to a gala evening at Rideau Hall, the official residence of Her Excellency the Right Honourable Michaëlle Jean.

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# THEORY OF MIND IN HARD-SCIENCE LINGUISTICS

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**Abstract**: Theory of mind has been defined in various ways. What it attempts to explain also enters into many cases of everyday communication. However, describing simple communicative acts typically presents a linguistically intractable problem of referential decoding—but not in hard-science linguistics. This paper examines several linkages in detail and shows how orthoconcepts eliminate cases of purported intractability and make possible an explicit formal approach to many questions relating to reference. It will be shown that this is because of the ability of HSL to interconnect descriptions at the social (linkage) and individual (participant / role part) levels of analysis.

**Keywords:** theory of mind, hard-science linguistics, human linguistics, orthoconcepts, reference

**Languages:** English

IN A CLASSIC EXPERIMENT, the researcher shows a child a candy box and asks the child to guess what is in the box. The child, of course, guesses candy. The researcher then shows the child that the box, in fact, contains pencils. Then a second child who has not yet seen what is in the box is brought into the room. The first child is asked to say what the second child will guess is in the box. Sometimes instead of a second child, a puppet is used (Miller 2007:254). Children who are described as not yet having developed a theory of mind answer pencils, not candy (Hogrefe et al. 1986). They cannot distinguish their own understanding of the state of affairs in the world from the (incorrect) understanding of another person. (Hence such experiments are often referred to as false-belief studies.)

"Theory of mind" has been defined in various ways, perhaps most generally as "how people go about making sense of other minds" (Astington & Gopnik 1991:7, paraphrased by Costall & Leudar 2004: 624). The term "theory of mind" is attributed to Premack (Premack & Woodruff 1978, cf. Leudar et al. 2004). There are those whose treatment of intentionality as captured by theory of mind "is profoundly Cartesian—epistemically and methodologically dualist" (Leudar et al. 2004:573). This is not an empty criticism:

> People are more than their physical bodies. We are more than dynamic bags of skin that can be seen, heard, and weighed.... [P]ersons also have beliefs, desires, and intentions that lie below the surface behavior. One cannot directly see, taste, smell,

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> or hear mental states, but it is an essential part of our ordinary adult understanding that other people have them.[1] *Theory of mind* research investigates the development of this framework. (Meltzoff 1999:257)

Moreover, "I would not want to suggest that this theory is reducible to behavior, but more strongly I would also deny that it is based on behavior" (Gopnik 1993:10, cited by Costall & Leudar 2004:636).

For many theory of mind researchers, the developing child is regarded as a theorist much like the developmental psychologist:

> "Both children and psychologists," as Terwogt and Stegge (1998, p. 247) put it, "face essentially the same problem: How to understand human action?" (Costall & Leudar 2004, p. 635)

Hence the "theory" in "theory of mind." Children (and when they grow up, adults) are seen as theorists who must construct representations of others' mental states. Leudar et al. (2004:574) argue that this way of thinking about the problem and the typical experimental tasks used in studies on theory of mind "both intellectualize intentionality and put abstract solipsistic reasoning about solipsistic mental states on centre stage." The alternative Leudar et al. offer "is to take situated social actions as the object of psychology, whose intentionality is directly graspable, without the benefit of an inference or mediating theory" (ibid.). While we may certainly question what intentions are "directly graspable" as opposed to "inferred," we can certainly avoid the most serious methodological problems simply by taking to heart the advice of Lieberman (2003:3): "We can only study the *physical characteristics* of living species" (emphasis added).

Indeed, it has been suggested by recent research on mirror neurons that they may function so as to

> allow an individual not only to perform basic motor procedures without thinking about them but also to comprehend those acts when they are observed, *without any need for explicit reasoning about them*. (Rizzolati et al. 2006:56, emphasis added)

This conclusion was based on various research studies showing that patterns of neural response correlate between performing an act and observing it performed by another.

In this paper, I have two primary goals. The first is to show how understanding of others of the kind theory of mind (henceforth, ToM) tries to capture can be formalized in a linguistic theory. The second is to show how this can be done without introducing dualism and thus without logical-physical domain confusions (Yngve, 1996:45–46, *passim*; Sypniewski 2007:*passim*).

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[1] Note the confusion here between that which cannot be *directly* observed and that which is not physically real. Gravity is not physically real, yet as a force it is part of a theory of the physical world, as are other entities not *directly* observable at the time they entered theories of physics, chemistry or biology (e.g., atoms, radio waves, genes).

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1. ORTHOCONCEPTS IN HARD-SCIENCE LINGUISTICS. Orthoconcepts are properties of a person communicating in the real world, couched in physical domain terms. As Yngve (2006:268) says, they "form in the observing role part of an observer" and "are not free-standing abstractions. Orthoconcepts are properties in a theory of a real observer that model a physical reality and require an observer in which to form." Thus, in addition to modelling a person as a participant in a particular linkage, we can model him as a participant in an observing linkage, one in which he is an observer of the linkage in which he is taking part. With orthoconcepts we can thus model a person's understanding of objects and other people in the linkage he is observing. To demonstrate this, I will take the case of the classic false-belief experiment of the unexpected contents task type involving the candy box which contains pencils (Hogrefe et al. 1986).

2. THE CLASSIC FALSE-BELIEF EXPERIMENT DESCRIBED IN TERMS OF PEOPLE AND ORTHOCONCEPTS. A linguistic analysis might typically focus on the discourse between the researcher and child, as in (1). The real-world objects (the box, the pencils, the Sesame Street puppet Ernie) and most of the events (the researcher opening the box to show the child what is in it, reclosing the box, and bringing out the Ernie puppet) are treated as an afterthought—not as the core of what is to be described. But in a Hard-Science Linguistics (henceforth HSL) analysis, we focus on all of the relevant real-world objects and events, modelling the people in terms of **participants** and their **role parts**, the objects in terms of **props** and their **prop parts**, and the energy flow (the light waves and sound waves moving among the people and objects) in terms of **channels** and their **channel parts**.[2]

(1) a. Researcher: What do you think is in this box?[3]
b. Child: Candy.
c. Researcher: Ann hasn't seen inside this box. What will Ann think is in the box before I open it?
d. i. Candy.
ii. Pencils.

(2) a. [unexpectedContents] = [researcher] + [child$_1$] + [child$_2$] + [candyBox]
b. [candyBox]<contents/pencils>

We can model the interaction between the researcher and the child as a linkage [unexpectedContents], with the people modelled as participants—the subsystems [researcher], [child$_1$], and [child$_2$] and the candy box containing pencils modelled as a prop—the

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[2] In HSL we distinguish between our view of an object or event in terms of its structure as a physical system (e.g., **participant**) vs. its functional cause-effect role (e.g., **role part**) in a larger system of which it is only one component; we label the larger system in this case a **linkage**.

[3] One reviewer noted my inclusion of *you think* in this narrative and questioned the validity of the unexpected contents task as we may not be sure "how a child decodes a sentence with *you think* in it." However, this is only my version. The unexpected contents task has been applied many times without a fixed script, e.g., with *What is in this box?* and *What will Ann say is in this box?* etc.

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subsystem [candyBox]; [child$_2$] represents Ann; see (2)a. The candy box has the property of containing pencils, we indicate this as <contents/pencils>, as in (2)b.

(3) a. [Obs$_1$] = [researcher] + [unexpectedContents]
b. [researcher]<[candyBox]<contents/pencils>>

The researcher is also an observer of the linkage in which he takes part. We model this as the observing linkage [Obs$_1$] in (3)a, which consists of [researcher] as the observing participant and the linkage [unexpectedContents], of which [researcher] is a member, but in a different role part. As an observer of the [unexpectedContents] linkage, [researcher] possesses the property <[candyBox]<contents/pencils>>; this property models the researcher's understanding of what is in the candy box during the experiment (3)a.

(4) a. [Obs$_2$] = [child$_1$] + [unexpectedContents]
b. [child$_1$]<[candyBox]<contents/candy>>
c. [child$_1$]<[candyBox]<contents/pencils>>

Likewise, the first child [child$_1$] is also an observer of the linkage in which he takes part. We model this as the observing linkage [Obs$_2$] in (4), which consists of [child$_1$] as the observing participant and the linkage [unexpectedContents], of which [child$_1$] is a member, but in a different role part. As an observer of the [unexpectedContents] linkage, [child$_1$] possesses a property representing his understanding of the candy box. This property changes in value, from [child$_1$]<[candyBox]<contents/candy>> before he has seen what is in the box to [child$_1$]<[candyBox]<contents/pencils>> afterwards; see (4)b–c.[4]

(5) a. [ObsObs$_1$] = [researcher] + [Obs$_2$]
b. [researcher]<[child$_1$]<[candyBox]<contents/candy>>>
c. [researcher]<[child$_1$]<[candyBox]<contents/pencils>>>

The researcher is also an observer of the first child's observing linkage; this is modelled via the linkage [ObsObs$_1$], in (5)a. We can model the change in the researcher's understanding of what the child understands about the contents of the box by showing a change in value of a property of the researcher in [ObsObs$_1$] from (5)b to (5)c.

When Ann [child$_2$] is brought in, we also model her understanding of the linkage in which she is taking part in terms of an observing linkage [Obs$_3$], in (6). We attribute the property to her [child$_2$]<[candyBox]<contents/candy>> before she has been shown what is in the box.

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[4] We can describe the change in value in terms of a combination of external events and internal states of the child, thus as procedural properties (Yngve, 1996:164, 246–274) of [child$_1$]. To do so we would specify the relevant causes in selection procedures and the changes in state, including motor activity, in task procedures. But these details will be left aside for now.

(6) a. [Obs$_3$] = [child$_2$] + [unexpectedContents]
b. [child$_2$]<[candyBox]<contents/candy>>

If the first child is able to possess properties that correspond to those we model in terms of being an observer of an observing linkage, then he will also be an observer in the linkage modelled in (7). In this case, he will be able to form an understanding of the second child which we model as the critical property shown in (7)b, which would change value to what is shown in (7)c only after he has seen her see what is inside the candy box.

(7) a. [ObsObs$_2$] = [child$_1$] + [Obs$_3$]
b. [child$_1$]<[child$_2$]<[candyBox]<contents/candy>>>
c. [child$_1$]<[child$_2$]<[candyBox]<contents/pencils>>>

On the other hand, if the first child is unable to possess such properties—that is, if his cognitive development is such that he is not yet able to form such understandings of others, then what we are modelling in (7) will not apply to him at all. Having seen what is in the box, he will have only the property (4)c to access when the researcher asks, "What will Ann think is in the box before I open it?" Thus, what has frequently been labeled ToM we can model in HSL as the ability to take part in a linkage as an observer of another's observing linkage.

3. UNDERSTANDING ABOUT OTHERS' CONCERNS MORE THAN THE CLASSIC FALSE-BELIEF SCENARIOS OF TYPICAL TOM EXPERIMENTS. Understanding of the states of others enters into many cases of everyday communication. HSL deals with such cases not in terms of discourses consisting of utterances which might be contextualized, but rather begins in terms of the people and relevant objects in their environment. To further illustrate the difference in approach, take the following example in (8).

(8) a. Peter: Could you hand me that book?
b. Quentin: Sure.

Here we have a discourse assumed to consist of two utterances, *Could you hand me that book?* and *Sure*. In HSL we would instead start by considering the entirety of the event, which might go as follows. Peter is in his dorm room, at his desk working on a history paper. He has his back to a table, at which his roommate, Quentin, is also working; but Quentin is doing homework for a math class. There are two books on the table, both easily within Quentin's reach, but well out of reach of Peter. Without even turning to look, and barely pausing in writing his draft, Peter reaches over his shoulder and says, "Could you hand me that book?" One of the two books is Quentin's math book. The other is one of Peter's books on French history, the topic of his paper. Without hesitation or conscious analysis, Quentin takes the history book and hands it to Peter. Describing simple acts of this type typically presents a linguistically intractable problem of referential decoding (see,

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e.g., Levinson 2006:100–3 on the logical problem of indexicality)—but not in HSL (Yngve 1996).[5]

We model the situation as four interrelated linkages [BookRequest]—Peter asking Quentin for the book (9)a; [RoommateWriting]—Peter writing his paper (10)a; and [ObsWriting]—Quentin observing Peter writing the paper (11)a.

(9) a. [BookRequest] = [Peter] + [Quentin] + [book$_1$] + [book$_2$]
b. [book$_1$]<topic/French history>
c. [book$_2$]<topic/math>

(10) a. [PaperWriting] = [Peter] + [paper] + [book$_3$]
b. [paper]<topic/French history>

(11) a. [QObsWriting] = [Quentin] + [PaperWriting]
b. [Quentin]<[paper]<topic/French history>>

In the role part associated with Quentin in the [QObsWriting] linkage, we can model Quentin's understanding of Peter writing his paper via the orthoconcept [Quentin]<[PaperWriting]>, a subpart of which is the orthoconcept [Quentin]<[paper]>; see (11) (a)-(b) and (10a). When Peter asks for "that book," Quentin must select between the books which are present, [book$_1$] and [book$_2$]. Quentin selects [book$_1$] because a property of the book, modelled as [book]<topic/French history> in the [PaperWriting] linkage, matches a subproperty of that of his understanding of the paper, which we model as [Quentin]<[paper]<topic/French history>> in the [QObsWriting] linkage.[6]

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[5] A reviewer suggests that "indexicality became a problem because of the limitation [of one's view] to a single sentence in its written form.... Pragmatics was brought in because indexicality was otherwise intractable under this limitation." However, when pragmatics is brought in, it does not usually offer a way to know what real-world knowledge (RWK) is relevant. A perennial problem in studies in artificial intelligence and natural language processing has been limiting the search over RWK to a scope that is not intractable. This reviewer has raised an interesting point. For more, see the next footnote.

[6] The same reviewer quoted in the previous footnote describes a similar situation from personal experience: "When my [college] roommate asked me for the math book, there were two on the desk. I handed him the one that was not mine without looking to see whether it was his. It was the simplest solution. No intractable indexical[ity] problem." He also says, "I wasn't aware of the indexical complexity at the time." Of course not. The infinite regress problem and the more general problem of how to limit a search over RWK are artifacts of an approach that places language at the center and which assumes RWK is encoded propositionally. It is an approach which places people, objects, and other aspects of the real world at the periphery of analysis. The brain is not an algorithmic, sequential processing device which performs searches over symbolically-coded data, as assumed by approaches which try to explain people communicating in terms of grammar and propositional RWK encoded in the brain. Recognizing this, HSL instead puts logical abstractions aside and focuses directly on the people and their surroundings.

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Note that we do not even need to model Quentin's understanding of Peter's understanding (either of the book or paper, for example) in order to predict that Quentin will be able to hand Peter the right book.

However, let's consider a more complex case. Suppose that a breeze is coming in from an open window and Peter repeatedly has to work to keep some of his papers from being blown around. Now suppose that the French history book is very lightweight, a very thin paperback, but that the math book is a larger and heavy hardcover edition. We know that it is very likely Quentin will respond to Peter saying "Will you hand me that book?" not by handing Peter the French history book in this case, but by handing him the heavier math book. Whether Quentin hands Peter the math book is tied to whether Quentin notices the trouble Peter is having with the wind blowing the papers.

We need to model Peter as an observer of the paper-writing linkage in which he is a participant; this is the observer linkage [PObsWriting] in (12)a. We model his understanding of the papers blowing as an orthoconcept in (12)b.

(12) a. [PObsWriting] = [Peter] + [PaperWriting]
b. [Peter]<[papers]<blowing>>[7]
c. [Peter]<[book$_1$]<~heavy enough>>
d. [Peter]<[book$_2$]<heavy enough>>

In order for him to respond to Peter's request appropriately this time, Quentin must have an understanding of Peter's understanding of the paper-writing linkage. This is modelled as the linkage [QObsPObsWriting], in which Quentin is an observer of Peter's observing linkage; see (13).

(13) a. [QObsPObsWriting] = [Quentin] + [PObsWriting]
b. [Quentin]<[Peter]<[papers]<blowing>>>
c. [Quentin]<[Peter]<[book$_1$]<weight/~heavy>>>
d. [Quentin]<[Peter]<[book$_2$]<weight/heavy>>>

The books, now considered in terms of their internal physical structure (as props) rather than in terms of their functional aspects (as prop parts), must also be modelled in the [BookRequest] linkage as possessing their relative weight properties [book$_1$]<weight/~heavy> and [book$_2$]<weight/heavy>. We can model Quentin again as performing a matching operation, this time between the properties of the books in the book-requesting linkage [BookRequest] and the property in the [QObsPObsWriting] linkage in (13). In this way we can explain how it is that Quentin will hand Peter a different book depending on real-world conditions in which the two are communicating, such as whether Quentin knows the topic of the paper Peter is writing, whether Quentin notices there is wind blowing Peter's papers around, and so on.

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[7] At this point is is necessary to distinguish the papers as a physical system modelled as the prop [papers], a subpart of the linkage [PaperWriting], from their functional aspect within that larger system, this functional aspect being modelled as the prop part [paper]. These are two models of the same real-world object, one in terms of internal physical structure (prop), the other in terms of functional (cause-effect) relations within its physical-domain context. The same goes for the books. Earlier, we were considering it in terms of their functional aspect (prop part) when we modelled them as having the property <topic>. Now we are considering the book in terms of its internal structural properties (as a prop) when we assign it the property <weight>. Both theoretical constructs (prop and prop part) model real-world (physical-domain) aspects of an object.

4. UNDERSTANDING SELF VS. ATTRIBUTING MENTAL STATES TO OTHERS. Research has shown that young children typically acquire an understanding of self before they can attribute mental states to others. As Keenan puts it,

> Children who haven't gained understanding of self do not have an understanding of other. At a very simple level, once the child gains a basic sense of self, she gains a basic ability to attribute mental states. These abilities include understanding pointing and eye gaze. The 2-year-old can understand pointing and appears to be able to infer the intention of the pointer. (2003:93–94)

This is exactly what the above descriptions predict should occur.

Recall that an observing linkage in which a child takes part was described in (4)a as [$\text{Obs}_2$] = [$\text{child}_1$] + [unexpectedContents]. This is the observing linkage in which the child has the role part of observer, observing himself in the unexpected contents task. When the child has an understanding of the contents of the box as pencils, for example, we describe this via the orthoconcept [child1]<[box]<contents/pencils>>, which requires the observing linkage (4)a in which to form. Thus, any property in the person that we describe via an orthoconcept in an observing linkage is one which requires an understanding of self.

The attribution of states by one person to another is more complex, and must be described in terms of an orthoconcept of an orthoconcept. For example, take the case when Peter's papers are blowing and Quentin has an understanding that Peter knows his papers are blowing. An observing linkage in which Peter is the observer allows the description of the relevant property in Peter. The observing linkage is (12)a, or [PObsWriting] = [Peter] + [PaperWriting]. The property in Peter of being aware of the papers blowing is described as (12)b, [Peter]<[papers]<blowing>>. Quentin's understanding of this property of Peter is arises in Quentin's observing linkage, in which he is observing Peter's observing linkage; the observing linkage of Quentin is (13)a, or [QObsPObsWriting] = [Quentin] + [PObsWriting]. Quentin's understanding of Peter's understanding of the papers blowing is described in terms of (13)b, an orthoconcept of an orthoconcept, specifically, [Quentin] <[Peter]<[papers]<blowing>>>. This what is commonly described in the literature on "theory of mind" as an attribution of a mental state to Peter by Quentin.

The HSL description thus predicts that, developmentally, understanding of self will precede the ability to attribute understandings to others.

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5. CONCLUDING REMARKS. This paper shows briefly how so-called ToM can be explained entirely in terms of real-world properties of people communicating, without recourse to mixed-domain ghost-in-the-machine explanations. It shows how orthoconcepts (Yngve 2006) eliminate cases of purported intractability and make possible an explicit formal approach to certain questions relating to understanding reference in real-world situations. It also shows—in formal terms—how one person's understanding of another's understanding of a shared environment is critical to how people communicate. This is possible because of the ability of HSL to interconnect descriptions at the social (linkage) and individual (participant / role part) levels of analysis.

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# USE OF *UM* AND *UH* IN SPONTANEOUS SPEAKING IN AUTISM SPECTRUM DISORDER

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**Abstract**: This paper reports on the use of hesitation fillers in the spontaneous discourse of speakers with autism spectrum disorder (ASD). It illustrates some general patterns of disfluency in an excerpt from one conversation with an adolescent speaker with ASD, then focuses particularly on the hesitation fillers *um* and *uh*. The paper takes as its departure point a study by Clark and Fox Tree, using *uh* and *um* in spontaneous speaking.

**Keywords**: hesitation fillers, autism spectrum disorder/ASD, Asperger syndrome, *um*s and *uh*s

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In the field of linguistics, it has long been recognized that naturally occurring spoken discourse is messier than people generally assume. In spontaneous speech, speakers produce false starts, fluency errors, word fragments, pauses, incomplete utterances, and overlapping speech. An important recent development in discourse analysis, however, is the idea that even hesitation fillers (e.g., *um* and *uh*) have meaning beyond what is usually ascribed to them. The recent work of linguists Clark and Fox Tree (2002) has shown that the hesitation filler *um* is systematically used before longer pauses while the hesitation filler *uh* is used to signal shorter pauses. In an extensive corpus-based study, they found this core contrast to be present across a variety of contexts in both British and North American speakers. This differential use of hesitation fillers is not done on a conscious level, but is an unconscious performance feature that speakers employ, much along the same line as nonverbal communication. Clark and Fox Tree suggest that the function of *um* and *uh* is to signal the length of an upcoming pause to listeners, anticipating their communicative needs.

In light of these findings, this paper investigates the use of hesitation fillers in the spoken spontaneous discourse of speakers with autism spectrum disorder (ASD). It is well-known that individuals with ASD have difficulty with spoken communication, especially in conversation. Disfluency is also an acknowledged difficulty (Spek et al. 2009), but investigations have tended to focus on tasks of verbal fluency rather than disfluencies in extended conversations (e.g., Geurts et al. 2004; Minshew et al. 2002; Turner 1999). Extended discourse is generally quite difficult for speakers with ASD. Perhaps as a result, the patterns of disfluency in conversation tend to be quite different from those found in the speech of typically developing speakers, although they are of the same kind. That is, where there is disfluency in talk, it is reflected in familiar phenomena such as incomplete utterances, false starts, and

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hesitation fillers, but there may be more hesitation phenomena for some speakers who have planning difficulties.

A hallmark of ASD communication is pragmatic difficulties, and in particular, having more pragmatic and discourse difficulties than structural problems (Tager-Flusberg 1994). Another area of consensus in autism research is that people with autism have difficulties in the area of Theory of Mind (ToM), the ability to recognize other people's mental states and to use information about mental states to predict and explain behaviour (Baron-Cohen et al. 1985). Communication difficulties are thought to be related to such difficulties in ToM: The understanding is that failure to read what an interlocutor may be feeling or believing as a conversation progresses interferes not only with understanding certain intended meanings (especially implicatures), but also with anticipating an interlocutor's needs in conversation.

This paper investigates the use of the hesitation fillers *um* and *uh* in 41 speakers with ASD, following Clark and Fox Tree's work. The results of the investigation suggest that speakers with ASD achieve surprising success when it comes to signaling the length of upcoming pauses in spoken discourse. To the extent that the successful use of hesitation fillers to signal pause length reflects both an appreciation of and anticipation of listener needs, the ability to use hesitation fillers in this way points to a potential strength in communication abilities in ASD and calls for a more nuanced account of pragmatic abilities.

1. OUTLINE. The paper first provides a brief description of ASD from the perspective of communication, as background to that field. It then presents a stretch of discourse that reflects a typical kind of pattern seen in Asperger Syndrome (e.g., Asp and de Villiers 2010) to give an example of what disfluencies can look like in ASD communication. Clark and Fox Tree's 2002 study is then introduced, with a focus on those details relevant to the present investigation. Next is the present study, which analyzes the use of uh and um in spontaneous conversations of 41 speakers with ASD and compares the results with those of Clark and Fox Tree. Finally, some conclusions and future directions are offered.

2. BACKGROUND. Autism is neurodevelopmental disorder profoundly affecting communication (APA 2000). Diagnostic criteria, for example, include impairments in social interaction, one-sided communication or a lack of social reciprocity, as well as restricted or repetitive activities including language (APA 2000). Since it was first defined some 66 years ago (Kanner 1943), widening of the diagnostic criteria has led to an umbrella term, autism spectrum disorder (ASD), to describe a spectrum of associated disorders including autism, high-functioning autism and Asperger Syndrome. And while high-functioning individuals with ASD may be quite productive in their speaking, this can be dependent on intensive interventions, and many people with autism still do not achieve a high level of functional communication, even with interventions. For high-functioning individuals, communication patterns and difficulties associated with ASD are quite varied, but commonly observed characteristics include irregular intonation patterns (Fine et al. 1991), idiosyncratic language (Volden & Lord 2001), echolalia (Prizant and Duchan 1981), focus on a single topic (Ghaziuddin and Gerstein 1996; de Villiers and Szatmari 2004), literalness (Happé 1995), and pedantic characteristics (sounding more rehearsed or bookish than a context demands,

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often with intonation patterns that are marked or ‘wooden’ [Ghaziuddin and Gerstein 1996; de Villiers and Szatmari 2004]).There is growing literature on problems with inferencing (Saldaña and Frith 2007). There is also consensus about pragmatic difficulties in ASD, including a common observation that in conversations and other social interactions, individuals with ASD do not take into account the knowledge of their interlocutors, or anticipate listeners’ needs (Gomez et al. 1993).

Closer text analyses have also shown: difficulties shifting focus and collaborating in topic development (de Villiers 2005) and repetitive language use (de Villiers and Szatmari 2004). But a less commonly explored area of difficulty is fluency.

3. TEXT ILLUSTRATION. Text (1) is a short stretch of discourse from a youth with high-functioning autism. It is an excerpt of a longer semi-structured conversation and occurs almost at the beginning. While there is no single profile or characterization for discourse of high-functioning youths on the autism spectrum, the fluency issues seen represent one fairly characteristic pattern. (The youth’s lines appear in bold.)[1]

(1) 1. Chi: uh Mrs Potter Mrs Potter I have lots of work to do in class.
**2. Chi: and I hate school.**
3. Res: what kind of work do you have to do?
**4. Chi: math um -: ## the.**
**5. Chi: [audible exhale].**
**6. Chi: uh well I got math and uh uh -: # it’s a little complex for me.**
**7. Chi: uh # spelling # uh -: story # um -: uh well uh -: ,**
8. Res: what’s your favourite subject James?
**9. Chi: my favourite subject is # absolutely nothing but playing lots of video games and waiting for summer which will be coming in a few weeks.**

In Text (1), there are some noticeable disfluencies, fluency phenomena that look more like what are typically associated with problems in performance, rather than simply blending in as a natural, sometimes even helpful, part of free-flowing, spontaneous spoken discourse. In this short excerpt (7 utterances and an audible exhale), James has 2 incomplete utterances (lines 4 and 7), 10 hesitation fillers (lines 1, 4, 6 and 7), 6 noticeable pauses (lines 4, 7 and 9) and a false start (line 4). The first line, a response to a question about how he’s doing, goes well. However, when he is asked for details, and in particular to classify or categorize the “kind of work” he has to do, there are many disfluencies. Then in the last line, 9, the disfluencies disappear, possibly because he has returned to a familiar topic, with material that is recalled. It is an interesting feature of the discourse that the disfluencies are reduced on a “favourite subject,” something that is often a clinical observation with ASD. Among

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[1] Transcription conventions:

| | |
|---|---|
| Chi: | child |
| Res: | researcher |
| -: | lengthened syllable |
| # | noticeable pause |

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the disfluencies are the hesitation fillers *um* and *uh*, and while the other fluency features are of interest in themselves, it is these two hesitation fillers that are the focus of the rest of the present discussion. The hesitation fillers *um* and *uh* are considered, in this speaker's discourse and in the broader study from which this speaker's discourse was drawn.

However, it is first useful to provide some background to Clark and Fox Tree's innovative 2002 study on *um* and *uh* in spontaneous speaking (Clark & Fox Tree 2002). *Um* and *uh* have traditionally been considered as belonging to the broad category of performance phenomena (errors or additions that are outside of language, although they may be useful indicators of a speaker's performance). And while some accounts have treated some performance phenomena as belonging within the study of language, such as, for instance, signaled self-repairs (cf. Schegloff, Jefferson & Sacks 1977, cited in Clark & Fox Tree 2002:74), *um* and *uh* have not been among those considered. They have, instead, typically been seen as belonging to the 'messier' variety.

In more specific discussions, *um* and *uh* have commonly been treated as fillers of various types. Goldman-Eisler (1968) treated them as filled pauses, the assumption being they are pauses that are filled (involuntarily) with sound, perhaps because of a problem with speaking. They have also been seen as non-linguistic signals, as a way of indicating one's intention to hold the floor (e.g., Maclay & Osgood 1959) or as a way for speakers to indicate they are working on producing speech (Goffman 1981). They have, in addition, been treated as interjections (James 1972), where a speaker comments on his or her own performance. These three perspectives on *um* and *uh* as 'filler types' are summarized in Clark and Fox Tree's paper (2002).

Clark and Fox Tree approached *um* and *uh* in a different way. Pointing to patterned regularities in how *um* and *uh* are used differentially to signal pause length, they argue that these two fillers should in fact be regarded lexically. Clark and Fox Tree investigated the length and frequency of pauses following hesitation fillers in several corpora. The primary data for their study was the London-Lund (LL) corpus, a corpus of 170,000 words from 50 face to face conversations (from the Svartvik & Quirk 1980 corpus of English conversations [Clark & Fox Tree 2002:80]). Auxiliary analyses of three other corpora were also used, including the Pear Corpus (recounts of a dialogue-free movie about pear-pickers from 20 individuals [Chafe 1980]), the Answering Machine (AM) corpus (a 5000 word corpus of 63 calls to telephone answering machines [Svartvik & Quirk 1980]), and the Switchboard corpus (SW) (a 2.7 million word corpus of telephone conversations [Godfrey, Holliman & McDaniel 1992]). The Switchboard corpus is not considered in the present discussion because it did not mark pauses. (See Clark and Fox Tree 2002). The data from the ASD study discussed here is most similar to the LL corpus (face-to-face conversation).

4. CLARK AND FOX TREE'S METHODS. Clark and Fox Tree found there was substantial variation by speaker in how often and with what preference speakers used hesitation fillers. Their summary of variation by speaker in their primary data set provides a useful indication:

> The 65 speakers in the LL corpus who produced more than 1000 words each ranged from 1.2 to 88.5 fillers per 1000 words (median 17.3). They also varied in which filler they used more often. One used only *uh* (85 instances), and another used only *um*

> (but just four instances). The median speaker used 52% *uhs* and 48% *ums*. So speakers have characteristic preferences in fillers, just as they do for other words in their vocabulary. (Clark & Fox Tree 2002:97)

Given this variance, Clark and Fox Tree only used data from speakers who produced both categories of filler in their statistical tests.

Clark and Fox Tree measured the length of pauses following um and uh using listener judgment. In their study, the pauses represent the judgments of trained coders, who considered the pause lengths and judged them (in their immediate contexts) as normal or abnormally long. That is, ultimately it was the perception of pause length that was studied. The exception was the Pear Corpus, where coders measured the pauses in seconds to the nearest .05 s. Coders gave the unit pause (one stressed unit) a value of 1 unit long [(-)], and the 'brief pause' (one light foot) was treated as .5 units long [(.)]. These were judged according to the speaker's rate of speech (Clark & Fox Tree 2002:81). Thus (.-) would be a value of 1.5; (.) would be a value of .5; and (-) would be a value of 1.

4.1. RESULTS OF CLARK AND FOX TREE'S INVESTIGATION. Clark and Fox Tree found that speakers use the hesitation fillers *um* and *uh* systematically when they expect a major or minor delay in speaking. Specifically, *um* was used to signal longer delays and *uh* was used to signal shorter delays. In the LL corpus, *um* was followed by delays far more often than *uh* (69 to 29 % of the time, almost 2.38 times as often) and *um* was also followed by much longer pauses than *uh* (0.68 to .25 units, or 2.72 times longer). In the AM and Pear corpora there were also longer pauses on average after *um* than after *uh*. In the AM corpus, the mean pause lengths were 0.54 to 0.15 units (3.6 times longer after *um*). In the Pear corpus pause lengths were 0.80 to 0.52 s, with a ratio of 1.54 (pauses were 1.54 times as long after *um*). **Figure 1** (overleaf) illustrates the mean length of pauses after *um* and *uh* in Clark and Fox Tree's study.

Clark and Fox Tree point out that the phenomenon is not simply a technique or signal of floor-holding, since there would be no need for this in the AM and Pear contexts, which were monologic. Rather they suggest that the function of um and uh seems to be singularly directed toward signaling the initiation of a delay. The results also suggest a core contrast between major and minor delays.[2] These findings have implications for cognition, suggesting that speakers who successfully use *um* and *u*h to signal imminent delays can estimate how long it will take them to retrieve an answer or formulate an utterance before they do so and monitor their speech plans for upcoming delays worthy of comment.

## 5. USE OF UH AND UM IN SPONTANEOUS CONVERSATIONS OF SPEAKERS WITH ASD.

5.1. PARTICIPANTS. Participants came from a follow-up study of children with high-functioning autism and Asperger syndrome at the Offord Centre for Child Studies in Hamil-

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[2] Clark and Fox Tree's study also analyzed other aspects of *um*s and *uh*s not addressed in the present paper, including whether the hesitation filler was attached as a clitic to the previous word, as in *and-uh*, and whether it was prolonged.

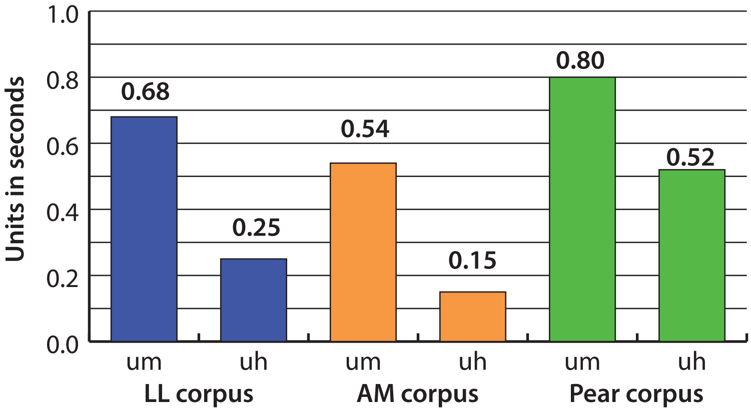

***Figure 1.*** *Mean length of pauses after* um *and* uh *in Clark and Fox Tree's study.*

ton, Ontario. There were both male and female participants, ranging in age from 10 to 13 years, and all had fluent language abilities. A full description of participants at the time of the follow-up study, and of the diagnostic details, can be found in Szatmari et al. (2000).

5.2. PROCEDURES. The present study of *um*s and *uh*s in ASD builds on Clark and Fox Tree's study but employs pause analysis software for the measurement of pause lengths. Most of the pause analysis was done through the use of the program Praat, (an application developed by Paul Boersma and David Weenink at the University of Amsterdam).[3] Additionally, an open-source script for Praat was used (mark pauses by Mietta Lennes, University of Helsinki). This script automatically delineates pauses in speech on the basis of a series of parameters.[4]

Audio recordings of 41 conversations with youths diagnosed with ASD were digitized into WAV format. The average length of pauses after *um* and after *uh* was used for each individual, and measurement of pauses in seconds was to 2 decimal places. The criteria were that they had to produce at least 3 *ums* and 3 *uhs*. Data from 41 speakers was originally analyzed. Four of the 41 speakers had either no *ums* or no *uhs* and were therefore not used for the final measure of pauses after *ums* vs. *uhs*. Six had only 1 *um* or 1 *uh*. (Of these, 5 had longer pauses after *um* than *uh*, 1 had the opposite pattern.) Therefore, in the final analysis there were 26 participants. One 21 second pause was also taken out since it was deemed to have occurred for reasons outside the discourse context.

5.3. RESULTS IN THE ASD DATA. **Figure 2** illustrates the mean length of pauses after *um* and *uh* in the ASD data. *Um* was followed by much longer pauses than *uh* (.62 to .36), with a ratio of 1.72, and this was statistically significant (P<.008).

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[3] *http://www.fon.hum.uva.nl/praat/*

[4] *http://www.helsinki.fi/~lennes/praat-scripts/*

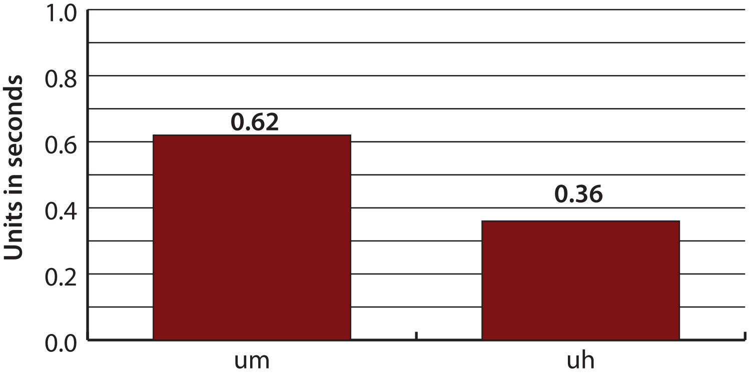

***Figure 2.*** *Mean length of pauses after* um *and* uh *in ASD data.*

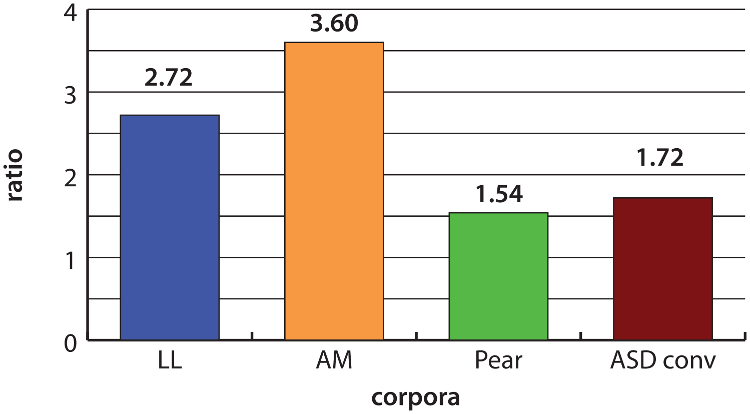

***Figure 3.*** *Ratios of pauses following um and uh*

Our results were compared with the results of Clark and Fox Tree's study. Recall that in the LL Corpus (face to face dialogue), the mean length of pauses after *um* was 0.68, after *uh* was 0.25, with a ratio of 2.72. In the AM Corpus (answering machine), the mean length of pauses after *um* was 0.54, after *uh* was 0.15, a ratio of 3.6. In the Pear Corpus (narrative retelling), the mean length of pauses after *um* was .80, after *uh* it was .52, a ratio of 1.54.

In the ASD sample, the same pattern occurs, with a ratio of 1.72 (*um* = .62; *uh* = .36), as can be seen by comparing **Figure 1** and **Figure 2. Figure 3** illustrates that the differences in pause length in the ASD data are less dramatic than in the LL corpus and AM monologue data used in Clark and Fox Tree's study. However, the core differentiation between major and minor pauses is still present. The ratio is most similar to the Pear data, where there is a retelling of material recently viewed and committed to memory.

6. DISCUSSION. In some ways this study provides confirmatory support for Clark and Fox Tree's study. An interesting finding is the closeness in ratio of the ASD data to the Pear stor-

ies. It might be tempting to see this closeness as reflecting something of the cognitive style of ASD, and this is one possibility. But it may also be an artifact of the methodology (measuring pauses in seconds, rather than measuring perception of pause length). In the Pear data, pauses were measured in seconds. Clark and Fox Tree did not employ this method in the other cases because they were working with existing transcribed corpora, but it is arguably a more systematic way (though time-consuming, since each pause is measured separately in a different file.)

The study had several complicating factors. The first, as stated, is that it measured total length of pause, not rater judgment. This makes a more imperfect comparison between studies. Also, the fact that participants in the ASD study had a diagnosis along the spectrum may have caused some problems, since in ASD there can be fluency issues, including very long pauses in some individuals' speech. In addition, some of the participants in the ASD study simply do not talk very much in conversation, because they find it difficult, so some participants had few hesitation fillers as a consequence of having less opportunity to produce them (e.g., in polar responses). An attempt was made to address this, and also to address this kind of individual variation driving the results, by only including speakers who produced at least three each of *um* and *uh*. But it is possible this step also eliminated a host of participants who have difficulties in prefrontal functioning. With larger and especially longer data samples, this could be improved upon. It was also necessary to take out pauses longer than 10 seconds, where something may have happened to interrupt the discourse. In one case, there was a 21 second pause that was eliminated.

7. CONCLUSIONS AND FUTURE WORK. The present paper has shown that speakers with ASD achieve surprising success when it comes to using hesitation fillers to signal pause length in spoken conversation, demonstrating a level of conversational cooperation not usually ascribed to speakers with ASD. The results showed the same core contrast between major and minor delays following *um* and *uh* as Clark and Fox Tree's study using normative data, suggesting that speakers with ASD do signal pause length systematically, anticipating interlocutor needs, but that this may be to a lesser extent than is usually found in face to face interaction. When compared to Clark and Fox Tree's results, the pauses for the group of speakers with ASD in face to face interaction were closer to the norms for recalled narratives. If we accept Clark and Fox Tree's conclusion that the function of *um* and *uh* is to signal the length of upcoming pauses to interlocutors, these results point to an attunedness to the signaling of upcoming delays in speech that runs counter to the general perception of ASD communication. It may be that there is less attunedness than in ordinary conversation, but this is conjecture, since the data samples used are very different. To explore this idea, a study with a control sample would be needed, and we are currently in the process of doing this.

There is also a possibility that the similarity to the Pear data signals something about cognition and language in ASD, in that the pattern in the Pear data was associated with recounting. One further possibility, then, is that in spontaneous speech the discourse used by speakers with ASD is over-rehearsed or memorized, with recalled structures playing a larger part than is usual. Understanding how this might relate to neurocognitive function is also a matter of further investigation. Thus several areas remain for extension and improvement.

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8. SUMMARY. The present study suggests that in ASD there are the same (albeit unconscious) patterns of using *um* and *uh* to signal pause length as those found in spontaneous speaking, as investigated by Clark and Fox Tree. This is significant in that it furthers Clark and Fox Tree's work and provides confirmatory support for *ums* and *uhs* as pause length signalers, support which is based on fine-grained measurement of pause length in milliseconds. It is also the first study to extend this research to a clinical context.

From a clinical perspective, the study also uncovers a relative strength in ASD communication, typically understood as being one-sided and unregarding of interlocutor needs. This may have clinical implications for monitoring and assessing communication skills, but also for highlighting essential similarities in communicative goals and strategies of speakers with ASD. Future research will look at several discourse contexts, with a control group and other neurocognitive measures.

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# A HISTORICAL SURVEY INTO THE ORIGINS OF LAMBIAN LINGUISTICS

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**Abstract:** although Sydney Lamb is now recognized as a neurolinguist, his quest for the actual nature of linguistic systems largely antedates his work in neurolinguistics. This paper offers a historical survey of the origins of Lamb's theory, before matters of neurological implementation were even considered. First, a sketch is given of the main steps and theoretical requirements in neurocognitive linguistics. Then, a summary is offered of Lamb's refutation of procedural orientation and descriptive processes in linguistic description. Next, the origins of Stratificational Grammar and Relational Network Theory are briefly discussed. Finally, the conclusion states that if Lamb's theory now proves neurologically plausible, it is because its exclusively linguistic foundations deviate from the mainstream proposals of the mid-twentieth century, and were erected instead on unbiased empirical bases.

**Keywords:** Stratificational Grammar, Relational Network Theory, neurocognitivism, reality, modeling, origins, Lamb

PROFESSOR SYDNEY LAMB advocates a realistic approach to linguistics. Those who are familiar only with his most recent work tend to believe that when Lamb speaks of reality he does it exclusively in relation to the neurological basis of our human linguistic systems. While it is true that neurological plausibility is a central preoccupation in Lamb's current work, that is but one aspect of his concern for reality.

Recently, Lamb has used the term "neurocognitive linguistics" to refer to his theory. Coincidentally (or perhaps not), this denomination delineates (from right to left) the progress of his thinking and concerns: First he devoted his work to *linguistics* proper, seeking to characterize the nature of actual linguistic systems; it was only after he had achieved this first goal that he started exploring the *cognitive* plausibility of his model; the *neurological* implementation of his theory is a more recent development in his thinking.

So, Lamb did not start his career looking for the cerebral areas subserving specific linguistic functions, nor were his relational networks originally intended to represent neurons or cortical columns; yet, nowadays his theory proves to have great neurological plausibility. Linguists who are new to his thinking might believe this to be merely a fortuitous development, but that is not the case at all. For if Lamb's theory now proves to be fully consistent with current neurological findings, it is because it freed itself from analytical biases during what might be called its purely structural/linguistic phase.

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The purpose of this paper is to provide a historical survey of the origins of Lambian linguistics, focusing on its exclusively linguistic (non-cognitive, non-neurological) stage. Section 1 consists of a sketch of the main requirements and theoretical steps in Lambian neurocognitive linguistics and a recapitulation of Lamb's position regarding the nature of linguistic systems. Section 2 comprises three parts: (i) a summary of Lamb's refutation of procedural orientation and descriptive processes in linguistic description; (ii) a discussion of the origins of Stratificational Grammar; and (iii) an account of the birth of Relational Network Theory, the development of whose main features is chronologically assessed. In the concluding section, the theoretical framework surveyed throughout the paper is adduced to lie at the heart of Lamb's theory's great neurological plausibility.

1. PREREQUISITES TO NEUROCOGNITIVE LINGUISTICS. As a linguist, Lamb might be presumed to study language. But what is language? For the reader of these pages, unlikely as it may at first seem, defining this term is no trivial endeavor, for language has been understood in many different ways throughout the history of linguistics. The most general definition, with which probably all theories might be presumed to agree in one way or another, would have it that linguistics is concerned with the study of language. However, Lamb contends that this conception, in whatever guise it may present itself, is misleading, as not only is there not a single, universal meaning of the term language, but none of the definitions proposed corresponds to any physical, discrete phenomenon in the world (Lamb 2004, in Webster 2004:395–407; Lamb 2006:1–2).

Lamb explains that language is not a concrete object, that it is not tangible or perceivable (hence observable) in any way. He explains that we can of course hear the sound waves produced in oral speech and read the graphemic sequences that make up written texts, but surely no collection of these ephemeral or otherwise vicissitudinous manifestations is equivalent to the structural system behind them. Following this line of thinking, Lamb (2006:1) states that to be realistic a theoretician simply needs to start from observable phenomena and then proceed to observe. In this sense, languages cannot be the object of study of a scientific linguistics, for they are not concrete phenomena. What offers a substantial amount of solid evidence is the linguistic processes that people engage in, as well as the unbiased analysis of the linguistic data they produce. By characterizing the nature and interrelations of linguistic productions, Lamb argues, it is possible to discover their underlying structure, albeit indirectly.[1]

In a second step of the exploration, the resulting structural conception of language[2] must be framed within a model capable of handling the actual processes that real individu-

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[1] The indirectness of the methods of inquiry does not deter Lamb from advocating a realistic, scientific linguistics. In his own words, "the methods of nuclear physics are also indirect: Nobody has ever directly observed a subatomic particle" (Lamb, 1999:8).

[2] The use of the term whose physical existence has just been argued against does not entail a contradiction. In fact, Lamb reasonably recognizes that there is a word *language* as well as a semological representation LANGUAGE (which can be related to different meanings). We can resort to both of them much in the same way as we can resort to the term *culture* and the semological representation CULTURE, which would be subject to the same type of considerations. All sciences handle

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als engage in. These include speaking, understanding, remembering, learning, and even those leading to slips of the tongue, Freudian slips, and other peculiarities of actual linguistic performance. At this stage, whatever realities are found are still postulated at a disembodied level, without concern for their biological basis.

The search for that biological basis comes in at the third phase of inquiry, captured by the element *neuro(logical)* in the theory's denomination. Only after the exclusively linguistic and the exclusively cognitive dimensions of the exploration have been covered does Lamb set out to study the possible physical implementation that the findings at those two previous levels might have. Although the fact that he has proceeded in this order is an incidental consequence of the way in which his intellectual concerns developed, the resulting theoretical approach coincides with a top-down modeling strategy.

Hence, neurocognitive linguistics is concerned with (at least) those three basic dimensions of reality. Intimately related to these observations are the three requirements that Lamb (1999:293) establishes for his theory. These are the requisites of (i) *operational plausibility*, meaning that the model arrived at must be capable of describing how people use their linguistic systems in real time, given actual processing constraints; (ii) *developmental plausibility*, which means that the model must account for how a linguistic system expands and restructures itself, not just at its initial stage, but also throughout its whole life; (iii) *neurological plausibility*, for a realistic model must be consistent with what is known about brain structure and functioning. A linguistic theory, in Lambian terms, is thus to be considered successful only if it satisfies those three requirements from a realistic, or scientific, basis.

Lamb thus embarks upon an exploration of the mental system that serves as a basis for language. Now, while many other so-called cognitive theories can have a claim to pursuing the same objective, Lamb is concerned with making sure that his postulations regarding the mind are consistent with current neurological findings, lest his theory fall prey to what he calls a pre-scientific conception of mind (Lamb 2006). In fact, the reason why he felt the need to incorporate the prefix *neuro* to the name of his theory is that several theories use the term *cognitive* without actually studying real neural processes. This distinction, as will become evident, is not a mere terminological eccentricity.

The linguistic system, then, is preliminarily conceived of as a mental system–viz., a complex of subsystems, of whose nature and potential all linguistic productions are but a manifestation. Now, in order to be realistic, any inquiry into the actual (still disembodied) nature of the linguistic system–whose structure can be determined via abstraction from linguistic manifestations–must characterize that system in its own terms, without introducing descriptive elements not present in the system itself (see section 2.1).

So, from a Lambian perspective, mental systems could be defined as the mediators between the "real world" and the "projected world" (Lamb 1999:104–5). The former would correspond to reality proper, which we can never grasp in its entirety; on the other hand, the latter refers to the subjective world each of us knows, which results from cognitive

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abstractions without a physical basis, for theoretical and explanatory purposes; yet, this is not equivalent to invoking an abstraction as an object of study. This last maneuver is what Lamb argues against.

processing of perceptual input and subsequent projection of the ensuing categories onto the real world.

Lamb's detailed characterization of the ways in which the mind shapes our conception of reality could be summarized as follows: Led astray by the elusive, self-deceiving nature of our minds, we naturally tend to assume that the real world has distinct, categorically organized objects, separated by discrete boundaries, capable of enduring through time, and essentially distinct from the processes performed on or with them. Most individuals' minds have a tendency to obscure the difference between the real world and the projected world; and therefore most linguists' minds tend to obscure the distinction between the reality of linguistic systems and the constructs which linguists themselves project on them.

Yet Lamb contends that this does not doom the quest for mental linguistic structures to failure, provided that one is aware of the difference between intra- and extra-mental phenomena. For the neurocognitive linguist, then, it is of utmost importance to begin their exploration by describing linguistic structure without analytical preconceptions. Failure to do so may cause the whole of the subsequent neurocognitive edifice to collapse.

2. THE BIRTH OF LAMBIAN LINGUISTICS: TOWARD A REALISTIC VIEW OF LINGUISTIC STRUCTURE. Every linguist making an original contribution to the discipline starts off his work by critically analyzing the theories of his mentors and contemporaries and proposing alternatives to the deficiencies they thus recognize. In particular, Lamb began shaping his views on linguistic structure by spotting several theoretical infelicities, in particular procedural orientation and descriptive processes, or mutations. On the other hand, it is also the case that every original linguist builds upon the work of others. In this sense, Lamb found inspiration for his theory of linguistic structure in the work of several other linguists, especially Hjelmslev, Hockett, and Halliday. The following subsections depict some of the main ideas that Lamb reacted against as well as those that served as the basis for his Stratificational Grammar and his Relational Network Theory.

2.1. LINGUISTIC UNREALITIES. Many linguistic theories are based on procedural description. These theories tacitly assume that linguistic description must be based either on induction or deduction. According to Hjelmslev (1961:12), *induction* could be defined as "a progression from component to class" (e.g., from sounds to phonemes, from phonemes to syllables, and so forth), whereas *deduction* consists in "a progression from class to component" (e.g., taking an unanalyzed text and progressively breaking it down into ever smaller units). For procedurally-oriented theories, no linguistic description is valid unless it is rooted in one of these two approaches.

However, Lamb (1966a, in Webster 2004:86–87) found that the aim of a linguistic theory cannot be inextricably bound to a given procedure. He considered induction and deduction to be merely tactical questions that a linguist could choose to adopt or not in describing a given language. In his case, he regarded procedure as "unnecessary and bothersome" (Lamb 1966a, in Webster 2004:92), contending that a theory-construction approach is superior. He advocated the view that the best way to embark upon linguistic description is to set forth a theory of the texts of the language, which means that

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> [W]e have to separate the practical procedure from the question of scientific validity [...] it doesn't matter how we arrive at our formulation. So we can use, for instance, intuition or guesswork to arrive at a hypothesis, provided we test our hypothesis. But with respect to practical procedure I would emphasize that we have to examine the linguistic data very closely (Lamb 1974, in Webster 2004:143).

So, for Lamb, what determines the validity of a linguistic theory is not its emphasis on a pre-established methodology, but the appropriateness of the hypotheses to the available data. In this sense, Lamb (1966a, in Webster 2004:95–96) agrees with Hjelmslev that while a theory must at first circumscribe its object of study so as to make it manageable, it must then broaden its perspective so as to correlate the postulated structure with as many linguistic phenomena as possible.

Another maneuver used in linguistic description which Lamb found flawed is descriptive process. Descriptive processes, or mutations, could be defined as the characterization of static linguistic relationships (e.g., between phonemes and morphemes) in dynamic terms, as if certain forms in the structure of a language existed solely as substitutes of other forms. For instance, Bloomfield (1970:213) referred to the phonological alternation found between *knife* and *knives* as a two-step process in which "'first' the [-f] is replaced by [-v], and 'then' the appropriate alternant [-z] is added." Descriptions of this kind, then, interpolate a metaphorical temporal dimension into the characterization of synchronic units.

Lamb argues that such metaphorical descriptions provide an unrealistic conception of linguistic structure, for "one of the chief properties of the linguistic system is that it is a *non-process type* of system, there is *no motion* in the linguistic system itself" (Lamb 1974, in Webster 2004:157). Of course, this does not mean that there are no processes in linguistic systems. As Lamb (1984, in Webster 2004:198) explains, there are actual diachronic processes of linguistic change as attested by historical-comparative linguistics (e.g., those captured by Grimm's Law), in addition to the real processes of speaking, understanding and learning. While these involve use of the system, they must be distinguished from the system itself.

The epitome of descriptive processes consists in the use of mutational rules in linguistic description. For example, in discussing different examples of Russian phonology, Chomsky (1964) stated that the rules he presented are to be ordered as given in his description. According to Lamb (1972, 1975), this implies that only one representation can be present at a time, and that only one rule can operate at a time, which leads to a number of problems: (i) the resulting order of rule application responds to artificial constraints, largely determined by the notation system; (ii) mutation rules imply replacement of symbols, so that when an element *y* replaces an element *x*, the latter is no longer there and so cannot serve as a conditioning environment for other rules; (iii) mutational accounts have built-in operations, in that linguistic information has no existence apart from the mutations.

Consequently, Lamb rejects rules as artifacts of the descriptive technique, since they incarnate a particular type of description, but are not part of linguistic structure itself. As we shall see, this is the conclusion that he came to in developing his first theory: Stratificational Grammar.

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2.2. STRATIFICATIONAL GRAMMAR. The origins of Stratificational Grammar date back to 1957, when Lamb was preparing his Ph.D. dissertation on Monachi. His project comprised not just a grammatical description of the language and a Monachi-English English-Monachi dictionary, but also the basis for a new framework for linguistic description, which he began developing while working on Monachi grammar. As Lamb explains,

> [w]e linguistic students had been taught that there were two levels of structure: phonemic and morphemic [...] And the relationship between the two levels was supposed to be quite simple. Morphemes could have allomorphs, and allomorphs were phonemic forms, composed of phonemes [...] But I found that for Monachi, as indeed also for English, it worked a whole lot better if we had two steps between morphemes and phonemic forms rather than one (1998a, in Webster 2004:27).

So, linguistic description required recognition of more intervening levels of structure, or strata. In *Outline of Stratificational Grammar* (1966c:2), Lamb proposes that his notion of stratification can actually be considered an extension and refinement of Hjelmslev's glossematics (1943), and that it also derives partly from the work of Hockett (1947, 1954). In critically analyzing Hjelmslev's *Prolegomena to a Theory of Language* (1943), Lamb (1966a, in Webster 2004:111–12) argues that while the separation of language into the planes of expression and content is indispensable, it is insufficient in that it subsumes sign-expressions and sign-meaning in just one level each. For instance, he demonstrates that while the sign *understand* can be broken down into the sign-components *under* and *stand*, its meaning is not reducible to the sum of their respective meanings—*understand* does not mean "to stand under" or anything of the sort. Since two-plane theories have no simple way to account for this fact, Lamb concludes that linguistic structure actually involves two sign-systems rather than one. Thus, there would be not two but three planes, so that "[t]he middle plane is 'content' relative to the lower one and 'expression' relative to the upper one" (Lamb 1966a, in Webster 2004:112).

In an attempt to avoid confusion with other terms, Lamb soon began using the term 'stratum' to refer to each of these planes.[3] In 1960, Lamb proposed that linguistic structure comprised four strata, which he called phonemic (e.g., /u/), morphemic (e.g., *under*), lexemic (e.g., *understand*), and sememic (e.g., the meaning UNDERSTAND).[4] A few years later, Lamb (1966c:1) would claim that all natural languages have at least four strata, while English and other languages have as many as six. Adopting the same stratificational stance as Halliday, Lamb argued that all languages would at the same time be organized around three major components, or systems, namely semology, lexicogrammar, and phonology – conventionally, phonetics is included within the phonological system, although the units in each system are essentially different. The terminology and subdivisions employed have suffered various changes since that time, but the recognition of these three major systems,

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[3] Incidentally, Hockett (1961) arrived at a similar conclusion and proposed the same term, 'stratum'.

[4] These are the labels with which he renamed the same strata that in 1958–59 he had referred to as *phonemic*, *hyperphonemic*, *morphemic*, and *hypermorphemic* (Lamb, personal communication).

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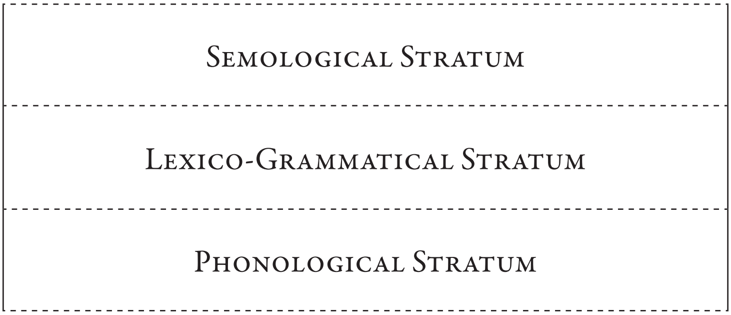

***Figure 1.*** *The three main strata in Stratificational Grammar.*

which have come to be known as strata themselves, has remained as a crucial axis of the theory. **Figure 1** depicts the basic organization of a stratificational grammar.[5]

Each of the strata shown in **Figure 1** has internal levels of structure, each of which includes its own patterns of arrangement, or syntax. Within stratificational jargon, those patterns receive the name of "tactics," so that the possible arrangements of phonemes are governed by "phonotactics," those of morphemes (within the lexico-grammar) by "morphotactics," those of lexemes (also within the lexico-grammar) by "lexotactics,"[6] and those of sememes by "semotactics." Given these distinctions, the oddity of a sentence such as Chomsky's famous *Colorless green ideas sleep furiously* (Chomsky 1957:15) would be explained by saying that while it observes the constraints imposed by lexotactics, it diverts from typical or unmarked semotactic patterns.

The relationship between the units in a given system and those belonging to the immediately inferior one is known as realization. For instance, the semological unit UNDERSTAND gets realized in the lexico-grammar as *understand*, which in turn gets realized in the phonological stratum as /ʌndrstænd/. The notion of realization enables the theory to do away with the problems addressed in section 2.1 above, as well as to readily account for a number of linguistic complexities known as realizational discrepancies, such as alternation, portmanteau realization, and neutralization (cf. Lamb 1999:37–40).

Originally, Stratificational Grammar used a rule-like formulaic notation. It was not until 1963 that Lamb began developing a new, more realistic type of notation for describing linguistic relationships (Lamb 1998a, in Webster 2004:31). This new notation was consolidated after Michael Halliday shared with Lamb his own notation for systemic networks.[7] This was a major milestone for the theory since, as Lamb (1998a, in Webster 2004:33) puts it, "[w]ith two or three simple modifications to Halliday's network notation, I had the essentials of relational network notation."[8]

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[5] The Phonological System also includes other units such as the syllable, the phonological word and the phonological phrase, which realize lexemes and phrases at the lexico-grammatical stratum.

[6] Lexotactics would correspond to what is traditionally known as 'syntax'.

[7] A full account of this notation for systemic networks, recognizing several types of relationships between 'systems', 'entry conditions' and 'features', can be found in Halliday (1967:37–38).

2.3. RELATIONAL NETWORK THEORY. In 1964, while relational network notation still included symbols in its structure, Lamb began working on a review article for the 1961 edition of Hjelmslev's *Prolegomena to a Theory of Language* (1943/1953/1961). As can be seen in the resulting manuscript entitled "Epilegomena to a Theory of Language" (1966a), Lamb shared many, but not all, of Hjelmslev's ideas.[9]

First, he subscribed to the view that a language is to be considered as the system underlying texts, rather than as the collection of texts themselves; therefore, to describe a language one needs to describe that underlying system. Secondly, he agreed with Hjemslev's idea that, in order to be realistic, a theory must meet the requisites of completeness[10] (i.e., exhaustiveness in the potential to describe texts) and correctness (i.e., the description should not generate non-texts), as postulated by Hjelmslev. Thirdly, he supported the contention that, since theories must be rooted in reality, research had to begin from assessment of empirical data; only after such data have been meticulously gathered and analyzed would the linguist be in a position to formulate theoretical proposals.

Also during the preparation of this paper, Lamb rediscovered a statement whose implications he had not hitherto fully appreciated. During his years as a student, Lamb had learned from Professor Mary Haas that "[t]he only way to understand a language is to understand it as a whole–everything in it as related to everything else" (Lamb 1998b, in Webster 2004:47). Shortly afterwards, Lamb would find in Hjelmslev a most insightful observation regarding the wholeness of language:

> The recognition [...] that a totality does not consist of things but of relationships, and that not substance but only its internal and external relationships have scientific existence [...] may be new in linguistic science. The postulation of objects as something different from the terms of relationships is a superfluous axiom and consequently a metaphysical hypothesis from which linguistic science will have to be freed (Hjelmslev 1943:61).

Lamb's concern for reality would lead him to the conclusion that if the above postulation was true, any description of linguistic structure should be consistent with it. It had already been established that actual linguistic structure features neither processes nor rules, and Lamb was now taking the first step towards the realization that linguistic *structure* (as opposed to its manifestations) also lacks objects (i.e., items or symbols), since only *relationships* can be presumed to have real existence.[11]

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[8] A more extended discussion of Halliday's influence on Lamb's network notation can be found in Halliday, Lamb and Regan (1988:7–8).

[9] In fact, Lamb (1974) maintains that his theory can be considered an extension of glossematics.

[10] Here Lamb points out that no complete account can be given of a linguistic system, so that a "partial completeness" is the best a linguist can aspire to achieve.

By the mid sixties, having already acknowledged the importance of notation, Lamb would dispense with symbols entirely in his theory. Again following Hjelmslev, he argued that while naïve realism would have it that linguistic analysis consisted in breaking down a given object into parts, neither the object nor its parts have any existence except by virtue of their mutual relationships. Observation of empirical data would then lead him to establish that there are only two basic types of relationships in language, from which all specific relations can be derived: the 'both-and' relationship (for co-occurring elements) and the 'either-or' relationship (for mutually exclusive elements). The former is known as the 'and' relationship, whereas the latter is called the 'or' relationship.

The 'and' relationship is present when two or more units occur sequentially (as in the case of phonemes) or simultaneously (think, for example, of the semological representations UNMARRIED and MALE converging in the lexico-grammatical realization *bachelor*). The 'or' relationship, on the other hand, represents paradigmatic options within the system (for instance, the semological unit ORDINAL could be realized either as *-st*, in *first*, or as *-nd*, in *second*, or as *-rd*, in *third*, or as *-th*, in *fourth*, *fifth*, etc.).

At this point, the new notation system would prove crucial, for Lamb believes that "any scientist's thinking is influenced by his notation system" (Lamb 1974, in Webster 2004:169). A notation system seeking to offer a realistic model of language must be freed of extraneous properties. Borrowing a notation from logic, as was the case in transformational grammar, would certainly jeopardize the chances that the theory would be correctly understood. Lamb thus proposed that a realistic notation should depict nothing but relationships, which could be understood as points of convergence bringing together other points of convergence. The result would be a network of relationships, hence the name of the theory.

The first presentation of relational network notation, already freed from symbolic objects, took place in 1965, during a lecture at the University of Michigan; it first appeared in print in a paper called "Prolegomena to a Theory of Phonology" (Lamb 1966b), and it found its major manifesto in *Outline of Stratificational Grammar* (Lamb 1966c). Relationships are represented by lines and nodes. Lines provide linkages between nodes by virtue of incoming and outgoing activation. For their own part, nodes can be classified according to three dimensions of contrast: (i) 'and' vs. 'or'; (ii) 'downward' vs. 'upward'; and (iii) 'ordered' vs. 'unordered' (cf. Lamb 1999 passim). **Figure 2** (overleaf) presents some of the main types of nodes in the theory, alongside a brief explanation of their functioning:

'And' nodes are represented by triangles, whereas 'or' relationships are depicted by horizontal brackets. According to the vertical convention adopted in Stratificational Grammar,

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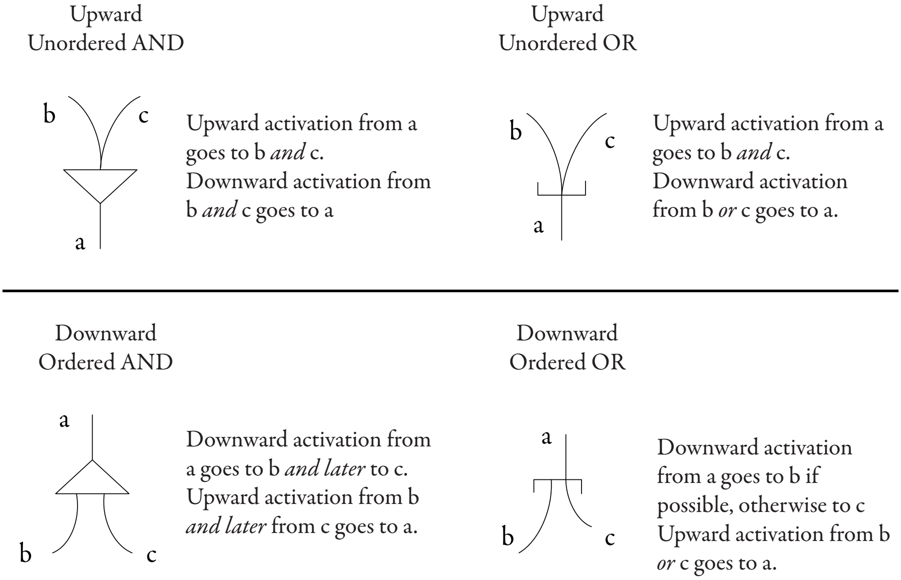
[11] Hjemslev's quote had made an impact on Lamb all along, from the time he first read the *Prolegomena* (1951 edition) in 1953. However, he explains that he did not fully appreciate it until he discovered that the symbols could be removed from a diagram showing the relationships among them without any loss of information. At that point, Hjelmslev's statement made direct sense to him in a more concrete way than his previous abstract appreciation of it (Lamb, personal communication).



Upward Unordered AND

Upward activation from a goes to b *and* c. Downward activation from b *and* c goes to a

Upward Unordered OR

Upward activation from a goes to b *and* c. Downward activation from b *or* c goes to a.

Downward Ordered AND

Downward activation from a goes to b *and later* to c. Upward activation from b *and later* from c goes to a.

Downward Ordered OR

Downward activation from a goes to b if possible, otherwise to c Upward activation from b *or* c goes to a.

***Figure 2.*** *Some of the main types of nodes in relational network notation (adapted from Lamb 1999:67).*

whereby meanings or functions are on the upper-most stratum and phonological expression is at the lowest one, each node can have an upward direction (leading from a given stratum to a higher one) or a downward direction (leading from a given stratum to a lower one). All nodes have both a plural and a singular side, determined by how many other nodes they can be connected to on each end. On the plural side, two or more lines either converge or branch out to receive or send activation from or to several other nodes; the singular side has only one line connecting the node with a single other node by which it can be activated (cf. the line linking the node for *in-* with the node for *incorrectness* in **Figure 3** below). Ordered nodes, whose lines lead to or stem from different points of the node, show sequential order in the emission or reception of their activation; unordered nodes, whose lines converge in or stem from a single point, show no particular sequencing of activation.

Evidently, since linguistic structure consists of nothing but relationships, a single node cannot be the basic unit of the model, for it fails to show where activation is coming from—i.e., which specific relationships the node is subsuming. The most basic unit in Relational Network Theory, then, is a linkage between two nodes or, in technical terms, a *nection*. At this point, it may appear that either the nodes or the nections *are* the symbols postulated in other theories. That is not the case at all. Nections represent points of convergence within the system, so that they only exist insofar as their relationships exist. One could of course attach a symbol or label to a node, but such a symbol would not be part of the structure itself. The linguist can rely on peripheral symbols as a signaling convention, much in the same way as road signs function in a highway system.

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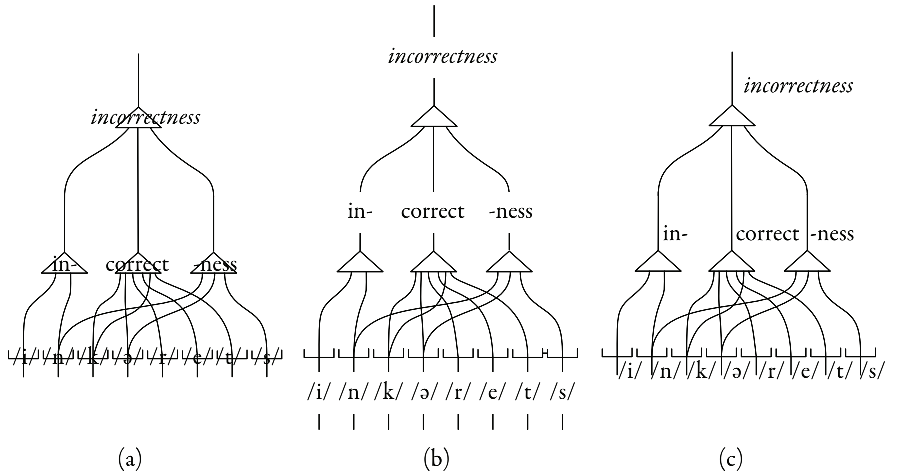
incorrectness
in-
correct
-ness
/i/ /n/ /k/ /ə/ /r/ /e/ /t/ /s/
(a)
incorrectness
in-
correct
-ness
/i/ /n/ /k/ /ə/ /r/ /e/ /t/ /s/
(b)
incorrectness
in-
correct
-ness
/i/ /n/ /k/ /ə/ /r/ /e/ /t/ /s/
(c)

***Figure 3.*** *Two wrong understandings of relational networks, and the right understanding.*

Since a linguist's task is to describe the *structural system* underlying language, he must avoid interpolating non-structural elements, such as symbols. Hence it would be a mistake to conceive of nections as symbols in **Figure 3**. Indeed, relational networks do not represent symbols, either within nodes (**Figure 3a**) or within lines (**Figure 3b**); instead, the correct conception of nections as units of linguistic structure could be represented as in **Figure 3c**, with labels located outside the network, purely for the benefit of the linguist and the reader. Linguistic structure itself is thus represented as what it is, a network of relationships.

This notation allows the linguist to handle a great number of naturally-occurring linguistic phenomena that other theories based on artificial descriptive machinery can rarely account for with success, such as polysemy and synonymy (cf. Lamb 1999:143). Another advantage of relational network notation is that it reflects the real ordering of linguistic units (cf. Lamb 1972), unlike those rule-governed systems which force artificial ordering on linguistic structure. Furthermore, in addition to accounting for the relationships between formal linguistic entities, the relational network ultimately touches on substance at the phonetic and meaning ends.

The question has sometimes been posed whether relational networks are not metaphorical, that is to say, artificial. To this, Lamb (e.g., 1974, 1999) responds that relational networks result from analyzing language exclusively in terms of its own structure, without imposing on the analysis external categories, methods or procedures. On this point, Relational Network Theory differs radically from most other linguistic theories, in particular Chomskyan models. Unbiased description of language leads to the conclusion that linguistic structure *is* in fact a network of relationships, in which anything other than those reciprocal links between varied points of convergence is not part of the system.

Therefore, relational networks describe actual linguistic structures. Of course, the networks up to this point had been devised in an attempt to capture the real nature of linguis-

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tic structure, which, as seen elsewhere, is essentially static. With the passing of time, when the networks were put into action to account for actual cognitive processing of language, more sophisticated types of notation needed to be introduced. Yet, this initial phase in Lambian neurocognitive linguistics provides enough ground to assertively define language as a stratified complex of multiple neural subsystems whose units have no existence except by virtue of the relationships which they represent.

Perhaps the most significant virtue of the model described above is that, in recent neurocognitive explorations in the theory, relational networks have been shown to have great neurological plausibility. At the macroscopic level, the brain itself has long been confirmed to constitute a vast information-processing network of neurons, organized in widely distributed subsystems–as the theory predicts it should be. At the microscopic level, the hypothesis that nections might be neurologically implemented as cortical columns is strongly supported by varied neuroscientific evidence (cf. Lamb 1999:320–69; and Lamb 2001, in Webster 2004:341–50). So, as far as neurolinguistics is concerned, the key lesson to be learned from Lamb's work is that the more a linguistic theory stays away from metaphorical and symbol-based conceptions of linguistic systems, the greater its chances of achieving neurological plausibility.

3. CONCLUSION. Questions of reality in Lambian linguistics are not limited to issues of neurological implementation. Relational Network Theory, the abstract model whereby neurocognitive linguistics now sets out to account for the biological systems subserving language, evidences great correspondence with neurological reality. But this would never have been the case if the theory had not been originally erected on realistic linguistic bases. Even abstractions, such as static linguistic systems, can be said to have a "real" structure behind them. Therefore, if linguistics is to become a legitimate science, it must seek to account for that underlying structure in realistic terms. Once this first step has been successfully covered, the path is clear for more ambitious cognitive and neurological explorations. Professor Lamb's career stands as living proof of the significant scientific results that can be derived by making "reality" the main concern of a linguist at every step of his thinking. That is why understanding the seminal reasoning that led Lamb to develop his theory as he did is a task every linguist, regardless of age and time, can surely profit from.

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# THE LIMITATIONS OF GRICEAN PRAGMATICS IN THE STUDY OF VERBAL INTERACTION

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**Abstract:** Although intended to characterize verbal communication and having become a prestigious strain of research current in contemporary linguistics, Gricean/Cognitive-Philosophical Pragmatics can not account for the actual cognitive system needed to interpret cases of unintended transmission of information. On the other hand, relational network theory can account for such cases.

**Keywords:** Pragmatics, communication, intention, Relational Network Theory, Intentional Fallacy

**Languages:** English, Spanish

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1. THE LIMITATIONS IMPOSED BY THE VERY CONCEPT OF INTENTION. Some years ago, Jeff Verschueren called for "a pragmatic return to meaning in its full complexity, allowing for interacting forces of language production and interpretation" (1999: 48). Currently, the importance of intention is being ardently debated in pragmatics (Arundale 2008, Danziger 2006, Davis 2007, 2008, Duranti 2006, Green 2007, 2008; Jaszczolt 2005, 2006, Keysar 2007, Levinson 2006a, 2006b, Németh 2008, Richland 2006, Thompson 2008). In this context, Haugh (2008:102) suggests that, while there is substantial (if not overwhelming) evidence against the placement of Gricean intentions at the centre of theorizing in pragmatics, "there remains a need to account for the cognition that underlies interaction".

However most pragmatics-oriented linguists have paid little or no attention to "non-intentional" texts, which give us many clues to understand how the cognitive linguistic network operates. These verbal phenomena, such as slips of the tongue and unintentional puns, have been analyzed with relational networks by Dell (1979), Dell and Reich (1977, 1980a, 1980b), Reich (1985), and Lamb (1999, 2004, 2005); see also Sullivan in the present volume. For example, after hearing that the sixth-grade teacher was going to be absent for a three-month period, one of the fathers attending a meeting said:

(1) We need a prostitute teacher.

He said *prostitute* instead of *substitute*, probably conditioned by the rhyme and certain conceptual associations. The lapsus linguae was produced spontaneously. The evidence for this is that he was surprised both when his hearers laughed and when his slip was pointed out.

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According to Cognitive-Philosophical pragmatics, such an example is not an instance of verbal communication, simply because the speaker did not intend to say anything about a prostitute. He transmitted some information about his feelings or thoughts, but this transmission is linguistically irrelevant for Gricean pragmatics. It could be compared with the information which is unintentionally transmitted by a trembling voice. Regarding the theory of relevance, the Freudian slip produced in (1) is not ostensive; consequently it is not the result of any communicative intention. In Sperber & Wilson's words, the producer of (1) did not want to make mutually manifest to audience and himself that he had intened to express the need for a prostitute.

Sperber and Wilson (1995:201) admit that pragmatics should not be concerned exclusively with the recovery of an enumerable set of assumptions individually intended by the speaker. However, the comprehension of unintentional text is not guided by the Communicative Principle of Relevance. This principle establishes that every act of overt communication conveys a presumption of its own optimal relevance, i.e., the utterance is not only relevant enough to be worth processing, but it is also the most relevant one which is compatible with the communicator's intentions. It is apparent that the hearers of (1) will be able to draw some inferences and to elaborate some hypotheses about the speaker's mental representations. For example, some of them could infer that the speaker has unconscious but strong cognitive representations about sexual desire. This interpretation seems to reveal the organization of some part of the cognitive system of a particular individual. Phonological associations favored semantic associations and, unintentionally, the speaker showed the audience some of his semantic representations. It is also relevant here that 'hire a prostitute' is a more frequently occurring sequence than 'hire a substitute'; for example, there are 105,000 hits for the first in Google, and only 46,000 for the latter. Thus we can suppose that 'hire a prostitute' is on its way to becoming lexicalized. This also influences the situation.

It is reasonable to infer that the speaker was thinking (probably unconsciously) about sex when he said *We need a prostitute teacher* instead of saying *We need a substitute teacher*. However, the speaker's meaning or communicative intention do not indicate where relevance is to be sought. The hearers found their own way independently of the speaker's intentions. There are no explicatures and implicatures when we infer, on the basis of the speaker's utterance, that there are, in the speaker's cognitive system, some mental representations which have not been ostensively and intentionally communicated. Some of these mental representations could be represented in the relational network (RN) of **Figure 1**. This RN helps us understand that the situation can be described by recognizing that the individual's cognitive and linguistic systems have the form of a network.

Since accounts of language in Gricean pragmatics are based on the concept of intention, supposedly abnormal cases such as slips of the tongue, unintended puns, and even misleading transmissions of information are not considered worthy of study by serious linguists. The consequence of this seems odd or disappointing. A huge number of verbal manifestations are explicitly (and also paradoxically) discarded by linguistic theories which claim to account for conversation or communication.

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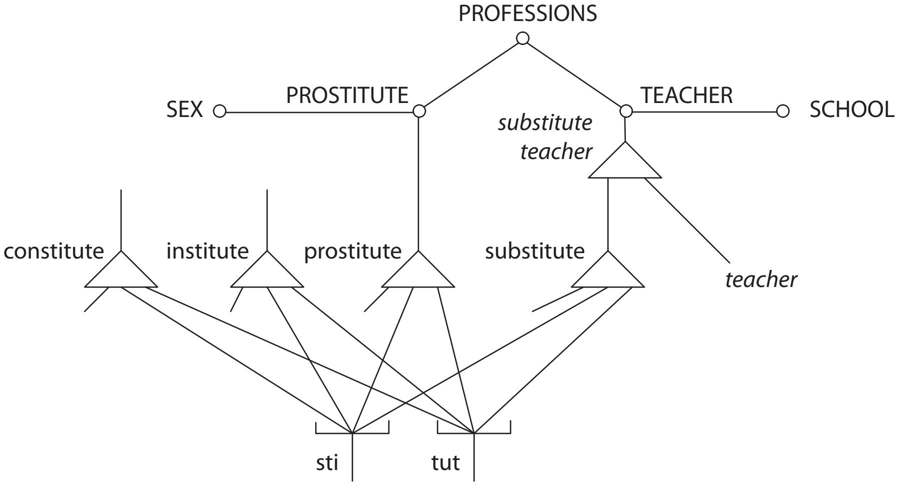

***Figure 1.*** *Slip of the tongue involving* prostitute *and* substitute.

On the other hand, neurocognitive linguistics allows us to assume that the lapsus linguae produced by the man who claimed for a prostitute teacher is especially helpful in giving us clues to how the cognitive linguistic network operates (Lamb 1999:181, 2004:243). The choice of lexeme can be explained as involving many semological, lexical, and phonological relationships. Examples like (1) are not intentional, but they are worthy of study when analyzing conversation, or verbal interaction. And when being studied, they seem to provide support for the network model. Within this context, we can suggest that the node corresponding to *prostitute* was more strongly activated that the one corresponding to *substitute* because the former received more activation from the conceptual level. The case is very interesting, because the nodes *prostitute* and *substitute* are both connected to the phonological nodes /sti/ and /tut/ (which come after phonological constituents /pro/ in *prostitute* and /sub/ in *substitute*). The example can be clearly explained in terms of neurocognitive relational network theory, since excitatory connections not only can have varying strengths but are also bidirectional (feed-forward and feed-backward) (Lamb 2005:170). The excitation coming from conceptual nodes SEX and PROSTITUTE was stronger than the one coming from SCHOOL, SUBSTITUTE and TEACHER, just because (at that moment) these representations were being activated in the conceptual system of the speaker. We could say that certain meanings in the conceptual system of the speaker were stronger than the meanings evoked by conversation, i.e., the activation of PROSTITUTE was (at that moment) stronger than the activation of SUBSTITUTE. This contributes to explain the selection of lexeme *prostitute* instead of *substitute*.

It may also signal that cognitive and neurological existence does not necessarily entail placement in specific loci in the brain. For example, intended and unintended meanings, or unconscious and conscious connections, have neurological existence as neurocognitive *functions*. In fact, the unconscious and the unintended meanings can be interpreted as neurocognitive functions which are realized by means of actual neurocognitive structures, namely the connections between lexemes and concepts as well as between concepts. Much of this has been suggested in the relational analysis of slips of the tongue and unintended puns (Dell 1979; Dell and Reich 1977, 1980a, 1980b; Reich 1985; Lamb 1999, 2004, 2005). This line of analysis could provide linguistic support to empirical psychoanalytical research.

There are many other relevant examples which can be provided and consistently analyzed in terms of relational network theory. This framework accounts for linguistic information in terms of connectivity and relationships, and it also enables us to explain some problematic cases that Gricean Pragmatics has traditionally overlooked.

Consider another example. In most Hispanic countries, soccer is an effervescently popular passion. Some time ago, the famous former soccer player Diego Maradona was chosen as the coach of the national team of Argentina. Many fans and journalists are Maradona worshippers, but many others are not. Consequently, there are ardent controversies in the media. During one of them, a young journalist (who had insistently made manifest his admiration for Maradona) exclaimed the following:

(2) *Maradona aspira a todo.*
'Maradona has great aspirations.'

The original example constitutes an unintended pun. Depending on the context, the Spanish verb *aspira* means 'aspire', 'vacuum', or 'inhale'. This third option is critical to the pun because it is well known that Maradona used to have serious problems with his addiction to cocaine (a drug that is *aspirada* 'inhaled' in Spanish). There are some clues which help us to accept that this example is an unintended pun or a Freudian slip. The young journalist who said (2) was praising Maradona's work. Two members of his audience laughed immediately after the utterance and made him notice that *aspira* could sound *indeseablemente irónica* 'inconveniently ironic'. There is another important fact which allows us to interpret the pun as unintended. The journalist was not only visibly embarrassed and annoyed after being made aware of the pun, but also said that that interpretation was *una inaceptable falta de respeto para Maradona* 'an unacceptable lack of respect for Maradona'.

Relational network theory can account for the information in the linguistic and cognitive systems of the young man who uttered (2). **Figure 2** provides a possible organization. Lamb suggests that the object of neurocognitive linguistics is the individual's linguistic system. Of course, this proposition does not exclude the possibility of studying verbal interaction. In this case, the hearers draw inferences about the organization of the speaker's cognitive and linguistic systems. Thus, the relations characterized in **Figure 2** account for the speaker's systems, but they also make reference to the interpretation of the hearers. In this sense, neurocognitive linguistics is also "interactive [… and] you need a cognitive approach to fully understand human interaction" (Lamb 2004:437).

Unintended pun comprehension is straightforwardly explained in RN terms. The hearers can infer that the cognitive system of the young journalist includes representations which are not consistent with those he transmitted intentionally; namely, there are representations about the link between Maradona and inhalation. The type of global com-

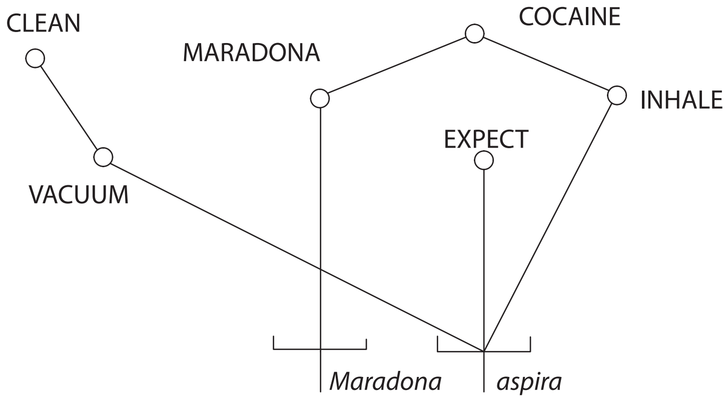

***Figure 2.*** *Unintended pun involving the utterance* Maradona aspira a todo.

prehension illustrated in **Figures 1** and **2** is actually performed by the interpreters on the basis of utterances such as (1) and (2). However, those inferential processes could never be characterized if the hearers (only) wanted to find an interpretation of the speaker's meaning satisfying the presumption of optimal relevance.

It could be mentioned that RN theory is also useful to account for unintentional ambiguities such as (3), which could hardly be interpreted as a Freudian slip.

(3) They are flying objects.

RN theory also allows us to describe intentional ambiguities, where the speaker "flouts" and "exploits" one of the sub-maxims of Manner (Grice 1967:725). Let us consider the example of the British General who captured the province of Sind, in India, and sent back the message (4) (Grice 1967:729).

(4) I have Sind.

The intentional ambiguity, based on phonology, is represented in **Figure 3** (overleaf).

The key factor is that relational network theory allows us to account for both intended and unintended forms of verbal interaction. On the contrary, Gricean Pragmatics does not account for utterance comprehension independently from the speaker's intention.

2. TOWARDS A NEUROCOGNITIVE APPROACH TO LANGUAGE USE. If we accept the line of argument developed in Section 1, we can also accept the following proposals.

1. There seems to be no place in Gricean Pragmatics for the study of unintentional verbal interaction.
2. The linguistic study of Freudian slips could count as a first and necessary step toward providing serious empirical support to psychoanalytical research.

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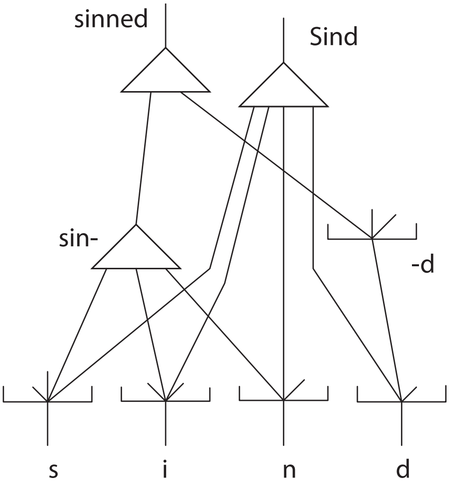

***Figure 3.*** *Intentional ambiguity involving* sinned *and* Sind.

3. Gricean Pragmatics can account for cases of intended transmission of information, i.e., communication in its own terms, cases in which there are representations intended by the communicator and identified by the hearer. But it fails to account for many important instances of verbal behavior. This fact could be called the intentional fallacy, the idea that only intentional transmission of information is worthy of linguistic (or philosophical) attention. According to Sperber (1994), a "truly *sophisticated hearer" a*ssumes that the communicator may be neither competent nor benevolent, and just intends to *seem* so. When following the path of least effort in the computation of cognitive effects, this sophisticated hearer should stop not at the first interpretation that is sufficiently relevant, nor at the first interpretation the speaker might have thought would be relevant enough to him, "but at the first interpretation that the speaker might have thought would relevant enough to him" (Sperber 1994:16). However, an actual sophisticated hearer should also consider the interpretations which are not consistent with the speaker's expectations, but also with the hearer's needs. Identifying the speaker's intention is just one of the several processes involved in verbal comprehension.
4. One of the basic hypotheses of current Gricean Pragmatics is that the occurrence of an expression with a given sense allows the hearer to develop a variety of inferences governed by the principle of relevance. This seems to be false, or only partially true: The hearer draws inferences that are not guided by the principle of relevance; usually, those inferences are incompatible with the intended meaning.
5. The *Communicative Principle of Relevance* states that every act of overt communication conveys a presumption of its own optimal relevance. According to the *Cognitive Principle of Relevance*, human cognition tends to be geared to the maximization of relevance. The first principle is incompatible with the cognitive processes which are actually developed by the hearer when making inferences on the

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basis of unintended transmission of information. But the latter could be accommodated in the terms of Lamb (2006) by neurocognitive linguistics. In fact, Lamb makes no distinction between linguistic information and non-linguistic information. "We, human beings, are engaged in a continuous process of building nections and interconnecting them, and of attempting to influence our fellow creatures in their nection building" (Lamb 2004:438). Therefore, intention can be conceived as just one of the varied and complex aspects of human communication.

6. Our linguistic and cognitive systems are able to produce (and understand) utterances which evoke many types of meanings. Some of these meanings are intentionally evoked, with mutual manifestness. But other meanings are not intentionally evoked, like those of unintended puns, slips of the tongue, unintended ambiguities and contradictions, etc. Within this perspective, we would like to suggest the possibility of studying a particular type of verbal products that could also be relevant for language use theory: misleading utterances. For example, when hearing a politician, an interpreter can believe that the politician is lying. Therefore, this interpreter draws many inferences about the speaker's cognitive system. This seems to be a very common case in everyday life. However, Cognitive-Philosophical pragmatics has little or nothing to say about many ordinary interactions in which the hearer believes that the speaker is lying. According to the canonical description given by Grice, the speaker is "misleading" when she "quietly and unostentatiously" violates a maxim and thus "dispromotes" communication or conversational rationality. According to Sperber & Wilson, the speaker is misleading when she knows that her utterance is not the most relevant she could have uttered; in this case the speaker unostentatiously contradicts the principle of optimal relevance, which will confuse the hearer's interpretation. As a result, misleading utterances are not genuine cases of (intentional) communication and therefore have been practically excluded from the scope of pragmatics. The theoretical framework developed by Cognitive-Philosophical pragmatics, paradoxically, cannot account for the cognitive processes prompted by many utterances just because the information has not been communicated intentionally. On the other hand, relational network theory provides the elements to demonstrate that the hearer actually makes pertinent inferences about the cognitive system of the speaker whom he attributes a lie. For example, in 1989, during his campaign for the presidency, the former President of Argentina, Carlos Saúl Menem used to conclude his speeches with the following words:

(5) *¡Síganme! ¡No los voy a defraudar!*
'Follow me! I won't disappoint you!'

When hearing him, many of us believed that he was lying. Relational network theory allows us to describe and explain such an ordinary phenomenon in linguistic interaction. **Figure 4** proposes two relational networks which account for two different meanings: (a) represents the meanings which Menem intended to evoke

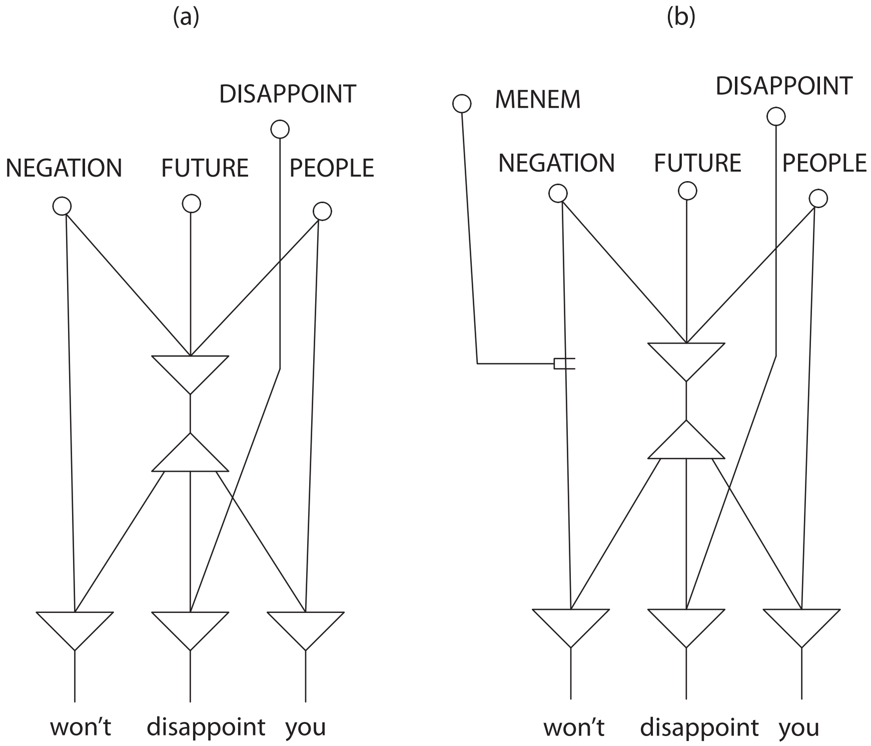

***Figure 4.*** *Production and interpretation of a "misleading utterance."*

in his audience, while (b) describes the interpretation of those who thought that Menem was lying. Concretely, Menem says the he won't disappoint the people but many hearers interpret that Menem *will* disappoint the people.

In **Figure 4b** there is a blocking element coming from a conceptual node and inhibiting a connection with a lexemic node. (By the way, neurocognitive linguistics establishes a clear distinction between the speaker's and the hearer's linguistic and semological systems.)

Intentional and mutually manifest transmissions of information have been the main object of Cognitive-Philosophical Pragmatics. However, a theory of language use should also account for unintended meanings and misleading utterances, because they reveal fundamental information about linguistic and cognitive processes. Thanks to neurocognitive linguistics, pragmatics can widen its perspective in its own benefit by considering all kinds of verbal productions.

Defenders of Cognitive-Philosophical Pragmatics could argue that unintended transmissions of information are not communicative, but such an argument would itself be rather deceitful. Cognitive-Philosophical pragmatics has overestimated the importance of intention and assumed that it is at heart of human verbal pro-

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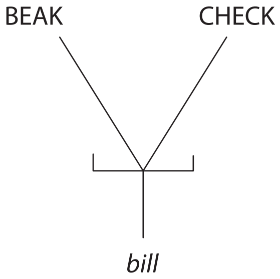

***Figure 5.*** *Simultaneous parallel activation of alternative interpretations in a pun.*

duction and comprehension. Therefore, unintended contributions are considered inconvenient and incidental phenomena. But any theory can be rescued from falsification if we decide to ignore enough inconvenient phenomena.

7. If the relational networks provide acceptable representations of the underlying logic of the knowledge being communicated, we can accept that meaning is always a matter of use. The distinction between semantic and pragmatic meaning has been one of the most important issues within Cognitive-Philosophical pragmatics. Such a distinction seems to be another linguistic illusion. It assumes that there is a core meaning encoded by linguistic expressions, and that speakers and hearers need to store this core meaning in order to use it properly in interactions. However, relational network theory helps us to understand that linguistic items such as words do not have an inner or intrinsic meaning. Words do not encode concepts; they are connected to concepts in our highly complex cognitive system (Lamb 1999:141). Cognitive-Philosophical Pragmatics depends heavily on clear classifications of usages, intentions, implicatures, etc. On the other hand, there is no need to distinguish between a core common semantic meaning and a contextual/usable pragmatic one.
8. Relational network theory seems to be a good approach to the study of language use. It aims at accounting for all verbal behavior, including unintended transmissions of information. And it also aims at accounting for the cognitive system which allows the hearers to understand verbal productions. This theoretical framework goes beyond the restrictive concept of intention. It conceives that a human cognitive system is in fact a network allowing simultaneous interpretations. Thus it explains what we need to understand an intended pun such as the one of the duck in the bar who says, after having drunk a lot, *put that on my bill*. Of course, the hearer needs to identify that the *bill* is related to the concepts CHECK and BEAK. The activation spreads from the lexical nection *bill* (in the interpreter's linguistic system) to both concepts (in the interpreter's conceptual system), and also to other cognitive systems, such as vision. **Figure 5** (adapted from Lamb 2005:161) represents roughly that both interpretations are relevant and simultaneous, since there is parallel spreading activation in the network.

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This overall process is rather different from the one described by Cognitive-Philosophical Pragmatics, which includes the identification of explicatures, implicated premises, and implicated conclusions (proper implicatures). Sperber and Wilson (2005: 368) say that these cognitive sub-tasks are *not* sequentially ordered. But this statement seems to be (unintentionally) contradictory vis-a-vis premises and conclusions. That is to say, an interpreter first posits premises and then reasons to a conclusion. In fact, the involuntary contradiction is made manifest in this passage:

> Which premises are added will depend *on the order* in which they can be constructed, via a combination of backward inference from expected conclusions and forward inference from information available in memory (Sperber & Wilson 2005:370, emphasis added).

Examples like the pun of the duck's bill are useful to support the idea that utterance comprehension is not sequentially ordered. However, it must be sequentially ordered in terms of the theory of relevance, whose human cognitive system needs to combine assumptions conveniently stored in order to find the premises and the conclusions which are consistent with the principle of optimal relevance. For example, the implicated premises must come *after* explicatures. The relevance-oriented model can be interpreted as an acceptable analytical perspective. But it cannot account for actual human cognition, because real neurocognitive/inferential processes do not seem to follow such an ordered and schematic sequence. In addition, it requires the manipulation of symbols, the storing of assumptions, and a computing device capable of manipulating symbols and assumptions, i.e., abstract entities which are not real constituents of the human brain. Relevance-oriented pragmatics needs to accept the existence of those entities, because it also assumes explicitly that language is a formal system and that generative/Chomskyan grammars are the best models of human languages. Sperber & Wilson (1995:9) state that generative grammars successfully account for the semantic representation of a sentence as "a sort of common core of meaning shared by every utterance of it." Therefore, the relevance-oriented process is cognitively implausible.

In contrast, RN theory explicitly aims at satisfying the requirements of cognitive and neurological plausibility. First of all, a network with parallel processing can explain the human cognitive ability to instantaneously access the meanings of linguistic expressions in a conversation; there is no need of search and comparison operations, which would be needed by a symbol-based system. Secondly, the requirement of neurological plausibility can be satisfied by the hypothesis that nodes are neurologically implemented as cortical columns (Lamb 1999, 2004, 2005).

9. Sperber and Wilson recognize that pragmatics should not be concerned only with representations individually intended by the speaker.

> The greater the range of alternatives, the WEAKER the implicatures, and the more responsibility the hearer has to take for the particular choices he makes. Much of human communication is weak in this sense, a fact that a pragmatic theory should explain rather than idealise away (Sperber & Wilson 2005:370).

Thus pragmatic theory will explain poetic effects, i.e., the peculiar cognitive effects of the utterances which achieve most of their relevance through a wide array of weak implicatures. Those weak implicatures are mainly the hearer's responsibility. This proposal suggests that there are many meanings which are not intended by the speaker but inferred by the hearer on the basis of the speaker's verbal behavior. This is consistent with the analysis of RN theory. However, the proposal seems to contradict the hypotheses about informative information, communicative intention, optimal relevance, etc. If the interpreter infers weak implicatures which do not deal with the speaker's intention, then comprehension is not guided by the Communicative Principle of Relevance (which states that every act of overt communication conveys a presumption of its own optimal relevance). In such cases, the hearer should follow pathways different from those required by optimal relevance.

In conclusion, Sperber and Wilson are right in saying that a pragmatic theory should explain rather than idealize away the non-individually intended meanings evoked by an utterance. However, the core hypotheses of relevance-oriented pragmatics are incompatible with such a profitable end.

3. GENERAL CONCLUSIONS: THE END OF THE INTENTIONAL FALLACY. The following list of statements summarizes the line of argument developed in this presentation.

1. Language use theory must explain the meanings evoked in an utterance but not individually intended by the speaker.
2. There are several types of unintentional meanings, such as those evoked by unintended puns.
3. Those unintentional meanings do make sense, and they are common phenomena in everyday language use.
4. The utterances which evoke unintended meanings reveal valuable information about the linguistic and cognitive systems of the speaker.
5. The interpretation of those utterances also reveals valuable information about the linguistic and cognitive systems of the hearer.
6. When interpreting unintentional meanings, the hearer identifies information which is independent of the speaker's intention.
7. If the information identified by the hearer/interpreter is independent of the speaker's intention, it has not been obtained by means of the Communicative Principle of Relevance.
8. Therefore, the Communicative Principle of Relevance does not explain those fundamental cases that a pragmatic theory should explain rather of idealize away.

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Some decades years ago, thanks to the pioneering work of John Austin, philosophers realized that many of them had accepted dogmatically the Descriptive Fallacy. That is, they realized that to understand the meaning of a sentence was not simply to understand its truth condition. Because of this wrong belief, philosophers had overlooked many other kinds of utterances and meanings. After the work developed by Austin, Grice, and many other important authors, philosophers and linguists started paying attention to non-descriptive utterances and several aspects of meaning which go beyond truth value.

Currently, thanks to neurocognitive linguistics, we realize that the intellectual tradition promoted by Austin, Grice and other prestigious authors also accepted a fallacy, namely the Intentional Fallacy. Gricean/Cognitive-Philosophical pragmatics failed to distinguish between intention and communication. Therefore, it has been mainly interested in the information intentionally transmitted by speakers and writers. Neurocognitive linguistics helps us to understand that verbal interaction is much more complex (and much more interesting) than that.

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# JOKES AND METAREPRESENTATIONS: DEFINITION JOKES AND METALINGUISTIC JOKES

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**Abstract:** This paper clarifies how our metarepresentational abilities involving the comprhension of definition and metalinguistic jokes emerge in communication within Relevance Theory. In order to address this issue, I adopt the incongruity and dissolution analysis. Metarepresentation is defined as a higher-order representation with a lower-order representation embedded inside it. Humorous cognitive effects come from the discrepancy between metarepresentational and non-metarepresentational interpretation. Metalinguistic jokes are related to our metarepresentational ability, which is the key to our verbal communication. A joke question can be interpreted as a real world, but the answer goes into a metalinguistic world, so humorous cognitive effects come from the two different interpretataions by the hearer. As for metalinguistic jokes, the hearer has to process more than one meaning in the question, and this generally involves additional processing effort.

**Keywords:** Jokes, Relevance Theory, definition jokes, metalinguistic jokes

**Languages:** English, Japanese

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THE PRESENT STUDY[1] argues that Relevance Theory can explain our metarepresentational abilities involving joke comprehension and a give more explicit and exhaustive explanation of Definition Jokes and Metalinguistic Jokes. As shown in Wilson (2000), we can use metarepresentations in various ways. Metarepresentation is defined as a higher-order representation with a lower-order representation embedded inside it. Joke interpretation comes from the discrepancy between the two forms, or two meanings, or two interpretations. Definition jokes can be captured by the discrepancy between non-definitional and definitional interpretations of a given sentence or a word. Metalinguistic jokes are on the language form and not the meaning. A metalinguistic joke question can be interpreted as a real world situation, but the answer goes into a metalinguistic world (spelling), so humorous cognitive effects come from the discrepancy between a real world interpretation and a metalinguistic world interpretation.

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1. SOME BASIC TERMS OF RELEVANCE THEORY. Relevance is a property of inputs to cognitive processes. Cognitive effects (or contextual effects) include the strengthening of existing assumptions of the system by providing further evidence for them, the elimination of assumptions that appear to be false in the light of the new evidence, and the derivation of new assumptions through the interaction of the new information with existing assumptions. A basic principle of the framework is the Cognitive Principle of Relevance, according to which the human cognitive system as a whole is oriented towards the maximization of relevance (see Sperber & Wilson 1995: 261–66). There are other important terms:

1. **Communicative Principle of Relevance:** Every utterance creates a presumption of its own optimal relevance.
2. **Presumption of optimal relevance:** The utterance will be (a) at least sufficiently relevant to be worth the hearer's processing effort, and (b) the most relevant one compatible with the speaker's abilities and preferences.
3. **Explicature** has two essential properties: it is an assumption communicated by an utterance and it has a propositional form pragmatically developed out of a logical form of the utterance. The job of the pragmatic inferential system is to deliver the communicated assumptions (explicatures and implicatures); the information available to it includes, crucially, the logical form of the linguistic expression employed. For the role of incomplete logical forms, see Sperber and Wilson (1995:285).

   In relevance theory, explicature is defined as the development of a linguistic expression encoded by Utterance (i.e., explicature = so-called literal meaning + reference assignment + word sense disambiguation + specification of vague terms + supplying empty categories with content + relations between events and states + other pragmatic enrichment).
4. **Assumptions** are intended to reflect the hearer's background knowledge.
5. **Implicature** is derived from the deduction of the utterance (= explicature) and assumptions. See Sperber and Wilson (1995:110–17) for the deductive device in the framework of Relevance Theory.

2. DEFINITION JOKES. As defined by Kobayashi and Cheetham (2005:94–96), a definition joke is a joke where a well known word or phrase is defined, or re-defined, with an ironic or humorous twist, and the humor comes from the definition being correct, but correct only from a particular (and often peculiar) point of view.

2.1. DEFINITION JOKES IN RELEVANCE THEORY. I argue that Relevance Theory can provide a good tool for explaining why definition jokes in question-answer pairs can produce some of the cognitive effects of humor that hold between the non-definitional and definitional interpretations of a given sentence or a word.

I provide below explanations of why a number of definition jokes are funny, using the framework of Relevance Theory.

(1) a. What's the definition of *repetition*?

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b. Can you say that again, please?

There are two explications for (1)b:

- **Explicature 1**: a metarepresentational interpretation (= an example of repetition)
- **Explicature 2**: a non-metarepresentational interpretation (= literal meaning)

The humorous cognitive effects in (1)b come from the discrepancy between the metarepresentational interpretation and the non-metarepresentational interpretation. In short, (1)b implicitly gives an example of *repetition*. So word plays like this make good use of the gap between definitional and non-definitional uses of the utterance. Processing jokes is less economical than processing plain, explicit messages. Certain effort-demanding interpretive paths of jokes are favored in exchange for an increase in humorous effects.

Similar effects can be seen in examples (2)–(4):

(2) a. What's the definition of *shy*?
b. Are you looking at me? Don't look at me!
(3) a. What's the definition of *angry*?
b. What do you think I am? A dictionary? Check for yourself!
(4) Teacher: What's the difference between *ignorance* and *indifference*?
Student: I don't know and I don't care.

2.2. ABNORMAL DEFINITION JOKES. (5) and (6) demonstrate that the discrepancy between normal and abnormal definitions makes these examples humorous.

(5) What's a *kidnap*?
A baby that's having a sleep!

*Kidnap* is normally defined as "illegally taking a person away by force."

(6) a. What do the letters *NASA* stand for?
b. Need Another Seven Astronauts.

Example (6) was jokingly said just after the space shuttle disaster. *NASA* is normally the acronym for the *National Aeronautics and Space Administration*.

Similar abnormal definition jokes can be observed in (7) through (10).

(7) Airport: A place where people hurry up and wait.
(8) Insurance: Gambling that you will be lucky enough to have a terrible accident and receive a lot of money.
(9) Insurance is just like marriage. You pay, pay, pay, and pay and you get little back.
(10) Television is the third parent.

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3. METALINGUISTIC JOKES. Metalinguistic jokes are based on the form and not the meaning of the text. In order to understand metalinguistic jokes, we have to be able to understand about language and its mechanics.

It is often said that children's jokes are very creative. According to Schumann (2009), a child's cognitive development of metalinguistic jokes is as follows: (a) a joke on the phoneme is appropriate for ages 6–8 years, (b) a joke on the word is most appropriate for ages 8–10, and (c) a joke on sentence structure is appropriate for ages 10–14.

Let us first look at example (11).

(11) What two letters of the alphabet contain nothing?
MT. (Spector 1992:21)

A joke question can be interpreted as a real world situation, but the answer goes into a metalinguistic world (spelling), so humorous cognitive effects come from the discrepancy between a real world interpretation and a metalinguistic world interpretation. In order to understand *MT* appropriately, we have to know the phonetic similarity between *MT* and *empty* and the semantic relation between 'nothing' and 'empty'. As with metalinguistic jokes, the hearer has to process more than one interpretation and meaning in the joke question, and this generally involves additional processing effort. Jokes are favored in exchange for an increase in humorous effects.

As clearly demonstrated in Wilson (2000), we have to consider how metarepresentational abilities fit together, both with each other and with the architecture of the mind. It is worth attempting to integrate them with an empirically plausible pragmatic theory. Metalinguistic jokes are related to our metarepresentational ability, which is the key to verbal communication. So in this section, we examine various kinds of metalinguistic jokes from phoneme to sentence.

### 3.1. METALINGUISTIC JOKES: A PSEUDOMORPHOLOGY CASE.

(12) Teacher: What kind of *key* opens a banana?
Pupil: That's a trick question. You don't need a key to open a banana.
Teacher: Wrong. The answer is a *mon*key. (Howell 2003:32)

Schumann (2009:1) explains that here "[a]n independent word is confused with a larger word but the sequence is not really a morpheme of the larger word." In (12), the pupil looks for the key in the actual world, not metalinguistic world, but the correct answer goes to the metalinguistic world, not the actual world. *Monkey* is a word containing the syllable *key* in its written form. So the humor comes from the discrepancy between the actual world and the metalinguistic world.

Similar examples of pseudomorphology cases can be seen in (13)–(19).

(13) Which *city* gives you lots of shocks? *Electri*city. (*TRIFIC jokes* 2002:31)

(14) What *pet* makes the loudest noise? A *trum*pet. (Archibold, Brown & Hurt-Newton 1999:125)

(15) What's the difference between *here* and *there*? The letter *T!* (Yoe 2001:28)

(16) In many marriages there are three *rings*: an *engagement* ring, a *wedding* ring and *suffer*ing. (Maruyama 2002:133)

(17) What's in the middle of *Alberta*? The letter *E*. (Hershkowitz 2004:57)

(18) Rearrange the letters of *new door* to make one word. *One word*. (Kim 2002:35)

(19) What *five-letter word* is always spelled wrong? *Wrong*. (Kim 2002:46)

3.2. METALINGUISTIC JOKES: IRREGULAR MORPHOLOGY OR SPELLING DISCREPANCIES. Some metalinguistic jokes are based on morphological skills and joke interpretation comes from the discrepancy between the normal spelling and an abnormal spelling, as shown below. Abnormal spellings are related to the exploration of new word meanings or semantics.

(20) What do you call a polar bear with no socks on? Bear-foot. (Hershkowitz 2004:30)

The normal spelling is 'barefoot'. But there is homophony between *bear-foot* and *barefoot* and a semantic relation between 'with no socks on' and 'bare'.

(21) Where do farmers in the north keep their hogs? In *pigloos*! (Hershkowitz 2004:2)

The normal word is *igloos*, not *pigloos*. There is a rhyme between *igloos* and *pigloos* and also a semantic relation between hogs and pigs.

3.3. METALINGUISTIC JOKES: SPOONERISMS. In (22) and (23), the humor resides in spoonerisms. (22) has a spoonerism of syllable onsets and (23) has a spoonerism of everything but the syllable codas.

(22) What's the difference between Shrek and a bowl of carrots?
One is a *funny beast* and the other is a *bunny feast*. (Dunn 2007:94)

(23) What's the difference between a *night watchman* and a *butcher*?
I don't know. What is the difference between a night watchman and a butcher?
One *stays awake* and the other *weighs a steak*.

3.4. METALINGUISTIC JOKES: SPELLING AND KNOWLEDGE OF FIGURATIVE LANGUAGE. The joke in (24) is a little more complicated.

(24) Why do you need glasses when spelling *Mississippi*? You need *four I's*. (Yoe 2001:147)

In (24) the joke question can be interpreted as a real world situation, but the answer goes into :

1. a metalingustic world, and
2. *four I's* should be interpreted as *four eyes*,
3. which can be enriched by ad hoc concept construction (Wilson 2004) at the explicature level to refer to a person who wears glasses.

So the answer *You need four I's* implicitly suggests *You should wear glasses*.

Humorous cognitive effects come from these three different processings by the hearer. As for metalinguistic jokes, the hearer has to process more than one meaning in the joke question, and this generally involves additional processing effort. Jokes favor increased processing effort in exchange for an increase in humorous effects.

3.5. METALINGUISTIC JOKES: SPELLING AND WORLD KNOWLEDGE. Examples (25)-(29) show jokes of this sort.

(25) Why is the letter *I* like Rome? Because both are capitals. (Kim 2002:50)

In order to understand (25), we need to know what *capital I* means and that Rome is the capital of Italy.

(26) Why is the letter *A* like a flower? Because a ***B*** comes after it! (Yoe 2001:141)

In (26), we need to know that B is homophonous with *bee* and bees like flowers.

(27) Kid: I had trouble with *diarrhea* at school today.
Mother: That's terrible! I didn't know you were ill.
Kid: I wasn't, I just couldn't spell it. (Howell 2003:10)

When the kid says *diarrhea* in (27), it can be interpreted as the actual illness called diarrhea. But the punchline makes it clear that the problem is just how to spell *diarrhea*.

(28) Where does Friday come before Thursday? In the dictionary. (Kim 2002:31)

In (28), the hearer considers the question in the actual world. But in order to find the answer, it is necessary to look in a metalinguistic world, such as a word list. The same is true of (29).

(29) What two things can you not eat for breakfast? Lunch and dinner! (Yoe 2001:54)

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3.6. METALINGUISTIC JOKES: ABNORMAL IDIOM INTERPRETATION. (30) involves an abnormal interpretation of the well-known English idiom *A bird in the hand is worth two in the bush.*

(30) Teacher: What do we know about *a bird in the* hand, class?
Pupil: That *it's worth two in the bush*?
Teacher: Well, I'd say *it makes it hard to blow your nose*. (Howell 2003:33)

In (30) there is a discrepancy between the normal idiomatic interpretation, which the student provides, and an abnormal, or literal and non-idiomatic interpretation, which is provided by the teacher.

3.7. METALINGUISTIC JOKES: A RESEMBLANCE-BASED QUOTATION. There is a famous Shakespearean quotation "To be or not to be, that is the question." In (31), the joke comes from the discrepancy between the real Shakespearean quotation and the similar expression used here.

(31) Ring, ring! It's Toby!
Toby who?
Toby or not Toby that is the question! (*TRIFIC Jokes* 2002:22)

4. THE TWO RONNIES (CORBETT AND BARKER) AND JOKES. Of all the sketches performed by The Two Ronnies, I have chosen the sketch "The Hardware Shop," commonly called "Four Candles," for analysis from the metalinguistic point of view. I begin with a summary of the sketch. The actual script follows in (32).

In (32), the hardware shopkeeper (Corbett) is confronted by a customer (Barker), who is holding a shopping list. The customer requests what sounds like "four candles". The shopkeeper then takes out four candles, but the customer merely repeats his request and the shopkeeper is confused. The customer rephrases his request to reveal he in fact wanted "'andles for forks." This joke is based on resemblance in sound, that is, "four candles" and "fork handles" are quite similar in sound.

(32) CORBETT: *(muttering)* There you are. Mind how you go.

*(Ronnie Barker enters the shop, wearing a scruffy tank-top and beanie.)*

BARKER: Four Candles!
CORBETT: Four Candles?
BARKER: Four Candles.

*(Ronnie Corbett makes for a box, and gets out four candles. He places them on the counter)*

BARKER: No, four candles!
CORBETT: *(confused)* Well there you are, four candles!

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(32) BARKER: No, fork 'andles! 'Andles for forks!

*(Ronnie Corbett puts the candles away, and goes to get a fork handle. He places it on the counter.)*

CORBETT (muttering): Fork handles. Thought you said 'four candles!'

In (33), Barker asks for plugs. Trying to avoid a similar mistake the shopkeeper asks what kind and is told "a rubber one, bathroom". Believing that he is asking for bath plugs the shopkeeper gets out a box of them and asks for the size. The customer's answer is "thirteen amp" revealing he in fact wants an insulated electric plugs. In this example, the word sense for "plug" is disambiguated and so it refers to "an electric plug" rather than "a bath plug" in order to develop the linguistic expression encoded by the utterance.

(33) BARKER: Got any plugs?
CORBETT: Plugs. What kind of plugs?
BARKER: A rubber one, bathroom.

*(Ronnie Corbett gets out a box of bath plugs, and places it on the counter)*

CORBETT: *(pulling out two different sized plugs)* What size?
BARKER: Thirteen amp!
CORBETT: *(muttering)* It's electric bathroom plugs, we call them, in the trade. Electric bathroom plugs!

*(He puts the box away, gets out another box, and places on the counter an electric plug, then puts the box away)*

In (34), Barker asks for "o's". This item causes the most frustration for the shopkeeper. He brings a hoe, hose, and pantyhose to the counter before working out that what Barker wants is the letter O—"'oes as in 'Mon Repose'". The box of garden gate letters is noticeably difficult to get to and put back, requiring a ladder. In this example, "o's" is finally understood to refer to "the garden gate letter 'O,'" that is, a kind of metalinguistic interpretation.

(34) BARKER: 'O's!
CORBETT: 'O's?
BARKER: 'O's.

*(He goes to get a hoe, and places it on the counter)*

BARKER: No, 'O's!
CORBETT: 'O's! I thought you said 'O! *( he takes the hose back, and gets a hose, whilst muttering)* When you said 'O's, I thought you said 'O! 'O's! *(He places the hose onto the counter)*
BARKER: No, 'O's!

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CORBETT: *(confused for a moment)* O's? Oh, you mean panty 'o's, panty 'o's! (he picks up a pair of tights from beside him)
BARKER: No, no, 'O's! 'O's for the gate. Mon repose! 'O's! Letter O's!
CORBETT: *(finally realising)* Letter O's! (muttering) You had me going there!

*(He climbs up a stepladder, gets a box down, puts the ladder away, and takes the box to the counter, and searches through it for letter O's)*

CORBETT: How many d'you want?
BARKER: Two.

*(Ronnie Corbett leaves two letter O's on the counter, then takes the box back, gets the ladder out again, puts the box away, climbs down the ladder, and puts the ladder away, then returns to the counter.)*

In (35), when he asks for "peas" the shopkeeper, believing him to be asking for the letter P for a garden gate, is understandably annoyed as they are in the box he has just put back. The customer waits for him to get the box down before better explaining what he wants - tins of peas. At this point the shopkeeper first suspects it may be a joke. In this example, he first interprets "P's" as the "O's" in (34), that is, "letter P's", but Barker's request was for "tins of peas".

(35) BARKER: Got any P's?
CORBETT: *(fed up)* For Gawd' sake, why didn' you bleedin' tell me that while I was up there then? I'm up and down the shop already, it's up and down the bleedin' shop all the time. *(He gets the ladder out, climbs up and gets the box of letters down, then puts the ladder away)* Honestly, I've got all this shop, I ain't got any help, it's worth it we plan things. *(He puts the box on the counter, and gets out some letter P's.)* How many d'you want?
BARKER: No! Tins of peas. Three tins of peas!
CORBETT: You're 'avin' me on, ain't ya, yer 'avin' me on?
BARKER: I'm not!

*(Ronnie Corbett dumps the box under the counter, and gets three tins of peas.)*

In (36), when he asks for "pumps," the shopkeeper asks him to elaborate. The customer complies by asking for "foot pumps". The shopkeeper brings a pneumatic pump to the counter. The customer then reveals he wants "brown pumps size nine". At this point the shopkeeper becomes convinced that the customer is playing a practical joke on him.

(36) BARKER: Got any pumps?
CORBETT: *(getting really fed up)* 'And pumps, foot pumps? Come on!
BARKER: *(surprised he has to ask)* Foot pumps!

(36) CORBETT: *(muttering, as he goes down the shop)* Foot pumps. See a foot pump? *(He sees one, and picks it up)* Tidy up in 'ere. *(He puts the pump down on the counter)*

BARKER: No, pumps fer ya feet! Brown pumps, size nine!

CORBETT: *(almost at breaking point)* You are 'avin' me on, you are definitely 'avin' me on!

BARKER: *(not taking much notice of Corbett's mood)* I'm not!

CORBETT: You are 'avin' me on! *(He takes back the pump, and gets a pair of brown foot pumps out of a drawer, and places them on the counter)*

In (37), after the customer asks for washers, the shopkeeper, out of desperation and annoyance, recites a long list as to what this could mean. The customer then explains he wants tap washers, one of the types of washer that the shopkeeper had failed to mention.

At this point the shopkeeper, having had enough, snatches the shopping list the customer has been holding to complete the order without any confusion. However, he then seems to take offence at something written on the list. He decides he cannot tolerate the customer any longer and calls his assistant from the back to complete the order. The assistant reveals that the request was for *billhooks*. The audience later infers that the shopkeeper misread it as *Pillocks*, which refers to "very stupid persons" in British English.

(37) BARKER: Washers!

CORBETT: *(really close to breaking point)* What, dishwashers, floor washers, car washers, windscreen washers, back scrubbers, lavatory cleaners? Floor washers?

BARKER: 'Alf inch washers!

CORBETT: Oh, tap washers, tap washers? *(He finally breaks, and makes to confiscate the list)* Look, I've had just about enough of this, give us that list. *(He mutters)* I'll get it all myself! *(Reading through the list)* What's this? What's that? Oh that does it! That just about does it! I have just about had it! *(calling through to the back)* Mr. Jones! You come out and serve this customer please, I have just about had enough of 'im. *(Mr. Jones comes out, and Ronnie Corbett shows him the list)* Look what 'e's got on there! Look what 'e's got on there!

JONES: *(who goes to a drawer with a towel hanging out of it, and opens it)* Right! How many would ya like? One or two?

*(He removes the towel to reveal the label on the drawer - 'Bill hooks'!)*

5. CONCLUDING REMARKS. Now I would like to summarize the main points of my paper. I have shown that certain types of jokes (e.g., definition jokes and metalinguistic jokes) can be captured by a kind of discrepancy between two interpretations in the framework of Relevance Theory. Definition jokes come from the discrepancy between non-definitional and definitional interpretations of a given sentence or word. Metalinguistic jokes are based

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on the language form and not the meaning. In order to understand metalinguistic jokes, we have to be able to understand about language and its mechanics. The humor comes from the discrepancy between the actual world and the metalinguistic world, between the abnormal spelling and the normal spelling, and so on.

Finally, I would like to assert that metalinguistic jokes are universal, and give you two Japanese metalinguistic jokes, which are called *Senryu* in Japanese..

(38) 続柄あわてて「妻」を「毒」と書き
'He was so confused that he filled in 毒 not 妻 as a relationship to her.'

Here 毒 is a Chinese character meaning 'poison' and 妻 is a Chinese character meaning 'wife'.

In example (39) the metalinguistic world (that is, Chinese characters) is used to make a short poem humorous in Japanese:

(39) 食べすぎに待っているのは体重刑
'You will be sentenced to overweight when you eat too much.' (*Mainichi Newspaper*, June 19, 2005)

Here 体重刑 are the Chinese characters meaning 'weight punishment' and 体重計 mean 'bath scale' (*health meter* in Japlish). In (39) the normal Chinese characters are 体重計, and the abnormal Chinese characters are 体重刑, which is homophonous with 体重計, but there is a semantic connection between "overweight punishment" and 体重計.

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# QUOTATION FORMULAS IN REPORTED SPEECH

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**Abstract:** Quotation formulas (QF) like He said occur as a unit in English, before, after, or in the middle of the quote (Q). In Korean, the subject and verb in QFs split around the quote: S "Q" V, conforming to the verb-final feature of the language. In contemporary writings, QFs and Qs often occur in two separate sentences, possibly to overcome the potential processing problem when the Q is long and to keep the verb in the final position in both QF and Q sentences. Other variable orders and forms are tied to historical developments. In Middle Korean, QFs occurred before Qs, with the speech verb in medial form in a clause chain. A generic speech verb was later added after the Q, resulting in two speech verbs around the Q. Double speech verbs around the Q are still in use for special functions in texts, e.g., at climactic and confrontational situations.

**Keywords:** Quotation, quotation formula, reported speech, verb-final languages

**Languages:** Korean, English, French

REPORTED SPEECHES are prevalent in our everyday use of language.[1] We report what someone else has said in our interaction with others. A form of speech attribution, called a quotation formula (QF),[2] is used for the hearer in a new speech situation to identify who the original speaker and addressee are, such as *John said to Mary*, *he said to Mary*, or *he said*. Languages use a variety of forms of QF, with differing functional motivations, but much research is needed for individual language patterns and cross-linguistic comparisons and generalizations. This paper presents the variable forms of QFs in Korean texts, their positions relative to the quotation (Q), and their functions in context. It also makes a cross-linguistic comparison with English and other languages from previous studies.

Reported speech has been the subject of many studies, both in its formal differences across languages and its contexts of use. There are diverse linguistic issues of importance that intersect in the study of reported speech, such as verb forms (e.g., tense in the quotation),

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[1] I am grateful to Jan Allen and Marlin Leaders for their valuable comments.

[2] I follow Longacre (1994, 1996) in using this term, but various other terms are used: speech-introducing elements (Janssen & van der Wurff 1996), quotative frames (Miller 1994), quotative constructions (Güldemann & von Roncador 2002), reporting clause (Lee 2002), speech orienters (Dooley & Levinsohn 2001, Van Otterloo 2008), and framing clauses (Jiang 2009).

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deixis, reference-tracking, grammaticalization of quotation formulas, and conversational analysis of interaction. Articles on these topics are included in several edited volumes on reported speech, such as Janssen and van der Wurff (1996), Güldemann and von Roncador (2002), and Holt and Clift (2007).

While a number of studies deal with grammatical differences between direct and indirect quotations, others posit points on a continuum between the two extremes, such as semi-direct and semi-indirect, or quasi-direct and free indirect, as in Aaron (1992), Dooley and Levinsohn (2001), and Hagenaar (1996). Jiang (2009) compares reported speech and reported thought, and finds that reported speech is predominant in narratives while self-report of thought is the norm in conversations.

Tannen (1989:105) argues, however, that the term reported speech is a misnomer and that, even in direct speech, it is "not reported at all but is creatively constructed by a current speaker in a current situation." She presents ten points of argument for constructed dialogue, such as the speech may be an instantiation, a summary, inner speech, or even by a nonhuman speaker like a cat.[3]

Indeed, research on reported speech (or constructed dialogue) involves a variety of linguistic issues ranging from syntax to discourse and pragmatics, and from descriptive data of diverse languages to their historical developments. Several studies report, for example, grammaticalization processes of a complementizer from a verb of speech or a noun (Heine, et al. 1991, Hopper & Traugott 2003, Rhee 2009).

This paper deals with the issue involved in the formal variation of quotation formulas, and their position relative to the quotation itself

The formal variation in QFs may involve whether to use a noun phrase, pronoun, or zero in referencing the participants, whether to include the reference to the speaker or the addressee or both, or to even whether to use a verb of speech. Why are there variations in QFs? This study investigates Korean narratives in light of previous findings. Longacre (1994) shows that the variation of QFs is responsive to discourse context. For instance, the intensity of interaction among participants is reflected in the use of excessive forms of reference beyond the need for identification, e.g., a noun phrase when a pronoun is sufficient. Some quotations occur without QFs (called drama) in special contexts as a device of immediacy to mark the climax or peak (Longacre 1996). This use of drama at high points in narrative seems to be shared by most, if not all, languages.

The position of QFs is another variable dependent on the flow of narrative. The QF may occur in the sentence preceding the Q or following it in Korean as well as in English. When the QF and Q occur within a single sentence, the QF may occur preposed to the Q, postposed, or in the middle of the Q in English. The subject and verb in the QF, like he said, behave as a unit and move about as a block (Longacre 1996:87). This unity, however, is usually broken in Korean. The QF is split with the Q in the middle: '**He** "..." *hako* (QUOTE MARKER) **said**.' This split QF reflects the strong SOV word order tendency of the language. Another pattern is to repeat the verb of speech after the Q, when it is already used before

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[3] This study, however, continues to use the term *reported speech*, since the expression constructed speech does not unambiguously refer to the topic under discussion.

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the Q in a nominalized form: '**He saying**, " ... " *hako* **said**.' The subject and verb may occur together after the Q, as in '"..." *hako* **he said**', although not common in occurrence.

This paper discusses these formal variables in reported speech in context and explores their functional motivations along with historical developments in Korean. The final section makes a cross-linguistic comparison of quotation formulas in head-initial and head-final languages. First we look briefly at the English data analyzed by Longacre (1994:129) as a point of departure for understanding varying patterns in Korean.

1. QUOTATION FORMULAS IN ENGLISH. A set of data selected by Longacre, in (1), comes from the denouement of the story, *Ordeal in the Winter Woods* (Blank 1988). Quotation sentences are highlighted in italics, and quotation formulas are in boldface as well.

(1) [1] Early in the afternoon of the tenth day, a Friday, Robin suddenly heard the swish of skis. [2] He saw a cross-country skier on a course that would bring him about 100 feet away. [3] ***Robin shrieked***, "Hello". [4] The skier was a 22-year old, John Steinmetz, a state parks lifeguard in Sta. Cruz. [5] Also a lone skier he was trying to come to grips with a problem of his own. [6] A few weeks earlier, he and others had failed to resuscitate a drowned swimmer. [7] He was ridden with remorse. [8] Some quality in Robin's shout made John swerve to a halt and pole his way back.

[9] "How's it going?" ***he asked the injured skier***.

[10] "I have a broken leg and ankle."

[11] "How long have you been out here?"

[12] "Ten days."

[13] "It took me about 45 minutes to get here from McCabe Lake," ***John said***.

[14] "Well," ***Robin answered***, "it took me six days."

After the initial preposed QF in [3], the dialogue occurs in [9]–[14]. As the dialogue starts in [9], the postposed QF identifies both speaker (Sp) and addressee (Ad). All other QFs have only the speaker, which is the usual pattern. [10]–[12] have direct quotes only with no QF, making the section very vivid and lively as in drama. Once the speaker and addressee are identified, the usual turn-taking pattern is assumed, so we know exactly who the speaker is in each case. In [13]-14, the speakers are referred to by their names, although each speaker's identity is available in context. This is the case of excessive forms of reference beyond the call for disambiguation. Longacre attributes it to a mildly confrontational situation in which the two characters are contrastively presented. In this short passage, all three possible positions of QF relative to Q are found, with the middle position occurring in the last sentence, [14].

This text displays a varying pattern of usage with regard to QF forms and positions, as summarized in (2).

(2) **QF pattern in the English text**

| | | |
|---|---|---|
| QF preposed to Q | [3] | (Sp: Name/*Robin* + V: *shrieked*) |
| QF postposed to Q | [9] | (Sp: pro/*he* + V: *asked* + Ad: NP/*the injured skier*) |
| | [13] | (Sp: Name/*John* + V: *said*) |
| QF in the middle of Q | [14] | (Sp: Name/*Robin* + V: ) |
| No QF (drama) | [10]–[12] | |
| Excessive reference | [13]–[14] | (Sp: Name/*John* + V: ;<br>Sp: Name/*Robin* + V: *answered*) |

2. QUOTATION FORMULAS IN KOREAN. Before we view the reported speech data, we need to discuss some relevant linguistic features of Korean to see the functional and typological motivation for the pattern of quotation formulas. First, Korean is a strongly head-final language. Sentences end in a verb with modal endings, such as *-ta* for declarative, *-ta* for imperative, and *-ta* for interrogative in the plain speech level forms. This verb-final tendency has an effect in quotation sentences in Korean. Second, Korean has a clause chaining structure in combining clauses, where medial clause verbs tend not to inflect for tense or mood and the final clause verbs are fully inflected with tense and mood. The QF may be a medial or final clause. Third, there are elaborate speech levels in Korean, such as formal, semiformal, or informal styles of speech; honorific forms for the subject or the object; and different forms of sentence enders for mood for the declarative, imperative, or interrogative, with eight or nine forms for each mood. This feature affects the direct quotes, since the forms in the quote convey additional information about the relationship between the interlocutors, just as vocatives may. Sometimes the additional information regarding the status, age, gender, and solidarity between the speakers can be too extraneous or even distracting in the current speech situation, especially when the content of the quote is to be focused, as in newspaper reports (Lee 2002).[4]

The first set of data comes from a short story, called *The Hat Seller* (HS), about a hat seller and the monkeys who try to imitate him. There are four examples of reported speech, as shown in **Table 1**, where Ø stands for a zero reference, and any overt expression of the participant reference is underlined. The data are largely given in literal English translation, with only some relevant verbs in Korean, which are marked by italics with gloss in single quotes.

The sentences are charted around the quotation column, which is followed by the verb *ha* 'do' with the suffixal conjunction *-ko* 'and' or *-myense* 'while'. The generic verb ha comes from mal.ha 'word.do' when it occurs with a Q (Ahn 2003:152). In HS[17], the verb of thinking is used with *-ko*, but the pattern is the same as those with ha. This sentence has no mention of the speaker (also in HS[3]), whose identify, however, is readily available from

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[4] This has caused the division between direct and indirect Q to be fuzzy. We may opt for further divisions between the two, such as semi-direct, when the sentence endings are neutralized for honorifics to the plain level of speech but still retaining quote marks, and semi-indirect, when the second person pronoun is still retained, as in 'I told him you do it'.

| Speaker; prior verb | Speech verb | Quotation | Verb/ Quote marker | Verb/clause |
|---|---|---|---|---|
| [3] Ø around the streets *tani-myense* 'wander-while' | | "Buy hats. Hats. (There) are men's hats, women's hats, and … The price is also cheap," | *ha-ko* 'do-and' | Ø wandered around all day long, but (there) was no one who bought a hat. |
| [11] The hat seller did not know what to do, so… | | "Why, who took all my hats?" | *ha-myense* 'do-while' | Ø looked up the tree. |
| [14] After a while, the hat seller | *mal.ha-ki-lul* 'say-NMLZ-ACC' | "Monkeys do not wear hats, so bring (them) back to me," | *hako* 'QUOTE MARKER' | *mal.hay-ss-upnita.* 'say-PAST-FORMAL.DECL' |
| [17] Ø | | "Monkeys are the animals that do exactly as people do, so …," | *sayngkak.ha-ko* 'think-and' | Ø took off (his) own hat and threw (it) on the ground. |

***Table 1.*** *Reported speeches in* The Hat Seller.

the context. Zero anaphora is a pervasive pattern of participant reference in the language, just as in Chinese and Japanese. What is unique to HS[17] is that the Q starts the sentence with zero reference to the speaker, while in others Q occurs in the middle of the sentence.

It is noteworthy that in HS[14] the verb of speech *mal.ha* 'say' occurs twice in the same sentence, first as a nominalized form with the accusative marker (*mal.ha-ki-lul* 'say-NMLZ-ACC') and at the usual sentence-final position for verbs with inflection (*mal.hay-ss-upnita* 'say-PAST-FORMAL.DECL ending'). This sentence is fully devoted to reporting the speech while other sentences include other verbs in the following clauses, e.g., 'wander' or 'take off'. It is clear from examples of this kind that *ha-ko* may not be a separate medial verb, but *hako* as a unit serves as a quote marker. In the majority of examples, however, *hako* is not functioning as a quote marker but as a medial verb, *ha-ko* 'do/say-and', as in all nine occurrences of reported speech in another story, *The Water Cicada*. HS[14] starts a new episode after the hat seller finds out that the monkeys have taken his hats while he was taking a nap under a tree. The new episode is the peak corresponding to the climax of tension in the story. This sentence starting with a time phrase 'after a while' and the explicit reference to him as *moca jangsa* 'the hat seller' reports his deliberate attempt to retrieve the hats by giving the command. We may consider that the QF is reinforced by the repetition of the speech verb in a confrontational situation.

| | **Sp/Ad** | **Speech verb** | **Quotation** | **Quote marker** | **Verb/clause** |
|---|---|---|---|---|---|
| 59 | | | "I am from 79th floor" | lako | I (Sp) answered. |
| 64 | The young man/<br>to me | | | | asked. |
| 65 | | | "Do you want to go down with them?" | | |
| 66 | I (Sp) | | "Thank you. I will be fine. Your friends are waiting for you" | *lako* | *mal.ha-mye*<br>'say-while'<br>let him go by himself. |

***Table 2.*** *Reported speeches from "9/11/2001".*

Next we examine a first-person narrative by Sujha Kim, "9/11/2001, the Luckiest Day of My Life" (2008), which contains eleven reported speeches. Six times the sentence starts with the Q. Sentences [64]–[65] in **Table 2** show that the Q is a sentence of its own after the QF occurs as a separate sentence. The column for speech verbs before the Q is empty, but is still set up to show that there is no speech verb in that position, unlike in **Table 1**.

Compare the position of the speaker *na-nun* 'I-TOPIC' in [59] and [66]. The sentence-initial position for the speaker as subject in [66] is the usual Korean pattern, although it is noticeable that 'I' is removed from the speech verb. In [59], however, 'I' occurs after the Q and quote marker and right in front of the speech verb. This position makes it possible to have the QF together, and to give the answer to the question in [58] without the interruption of the subject. It might be desirable in these aspects, but it is a marked order, which is not common. In this text for the quote marker lako and *hako* are used interchangeably; while *hako* is more frequent, is used only for direct quotes.

Reported speech displays interesting developmental changes in the history of the Korean language. Ahn (2003:148) discusses three types, as in (3), with illustrative data from different periods. Type 1 was primarily used in Middle and early Modern Korean from the 15th to 18th centuries, while Type 3 is the representative pattern of Modern Korean. Type 2 was used in the 17th and 18th centuries along with Type 1 but as a transitional pattern toward Type 3. This is similar to the pattern in H[14] (**Table 1**) in having two verbs of speech, before and after the Q, but the second verb is *ha* 'do' rather than *mal.ha* or *ilu* 'say'. He (151) notes that the first speech verb, as a variant of Type 2, may be nominalized with an accusative marker, which is exactly what is found in H[14].

(3) Type 1 Subject – Speech verb – "Quotation"
Type 2 Subject – Speech verb – "Quotation" –
Type 3 Subject – "Quotation" – Speech verb

Three different versions of the Bible translated into Korean display analogous changes in quotation sentences. The earliest version of the three, the Revised Translation (RT) in 1961, is commonly used to this day.

| Sp/Ad; prior clause (medial) | Speech verb (medial) | Quote | ha verb (medial or final) |
|---|---|---|---|
| [4] again Ø (Sp) other servants send-mye 'while' | *kalo-twe*<br>'say-ing' | "Tell those who are invited, 'Behold, I have made ready my dinner, … and everything is ready; come to the marriage feast,'" | *hayette-ni*<br>'did-then' |
| [8] then Ø (Sp)/ to the servants, | *ilu-twe*<br>'say-ing' | "The wedding is ready, but those invited were not worthy. [9] Go … and invite to the marriage feast as many as you find," | *ha-nte*<br>'do-and' |
| [11] The king came in … saw a man…, | | | |
| [12] Ø (Sp) | *kalo-twe*<br>'say-ing' | "Friend, how did you enter here not having wedding clothes?" | *ha-ni*<br>'do-then'<br>he was speechless |
| [13] then the king (Sp) / to the attendants | *mal.ha-twe*<br>'say-ing' | "Bind his feet and hands and throw him into the outer darkness; there will be wailing and gnashing of teeth," | *ha-nila.*<br>'do-DECL' |

***Table 3.*** *Reported speeches from Matthew 22:1–14 in Revised Translation.*

Let us view reported speeches from a short passage known as the parable of the wedding feast in Matthew 22:1–14. The whole parable is translated into two sentences (vv 1–10; vv 11–13), plus another one for the moral (v 14 'For many are called, but few are chosen') in RT. The quotations and the surrounding clauses are shown in **Table 3** with the verse numbers, 4, 8, etc. After vv 2–3 stating that 'Heaven is like a king who gave a feast … and sent … but they would not come', v 4 reports the speech of the king (zero reference) to his servants (NP) to tell the invited guests to come.

All instances have a pre-quote speech verb in a medial verb form and *ha* after the Q. The QF (as subject and verb together) before the Q is like English, Biblical Hebrew, or Koine Greek, except that Q is still followed by the verb *ha* 'do'. The pre-quote speech verb 'say' is an archaic form possibly found only in RT and some earlier texts.

The same four reported speeches are translated quite differently in the two other versions. In the Common Translation (CT) in 1977, which was to reflect Modern Korean speech for both Catholic and Protestant churches, there is no speech verb before Q, as shown by the empty column before Q in **Table 4**(overleaf). Each of the four quotes is followed by the quote marker *hako* and a verb of speech in the final clause ('said', 'directed', 'asked'). The parable is now translated into thirteen sentences, each ending in a final clause verb. The QF is split around the Q: Subject (Sp), Q, quote marker *hako*, and speech verb. All four sentences are in Type 3 pattern, but with the quote marker *hako*. Although Ahn

| Sp/Ad; prior clause (medial) | Speech verb (medial) | Q | Quote marker | Speech verb in final clause |
|---|---|---|---|---|
| [4] So Ø (Sp) again *the servants* send-*mye* | | "Q" | *hako* | *illetta*.<br>'directed' |
| [8] And then, Ø (Sp)/ to the servants | | "Q" | *hako* | *mal.hayetta*.<br>'said' |
| 11 The king went in ... | | | | there was a man who didn't wear wedding clothes. |
| 12 him see-ko<br>Ø (Sp) | | "Q" | *hako* | *mulletta*.<br>'asked' |
| 12b He | | | | had no word to say. |
| 13 At that time the king / to the servants | | "Q" | *hako* | *mal.hayetta*.<br>'said' |

***Table 4.*** *Reported speeches from Matthew 22:1–14 in Common Translation.*

(2003:148) does not show the quote marker *hako* in his formula for Type 3, he (150) and Rhee (2009) report that quote markers *like* or *lako* started to appear in early Modern Korean in the 18th and 19th centuries.

The two versions use radically different forms and the positions of QFs, clearly reflecting historical changes from Type 2 to Type 3. The Standard New Translation Revised Version (SNT) in 2002 adopts yet a quite different pattern in handling the same reported speeches. The parable is now translated into seventeen sentences.[5] Three out of the four reported speeches (vv 4, 8, 13) employ separate QF sentences before the Q sentences, as shown in **Table 5**. The Q in v 12 occurs in the same sentence as the QF, using the variant form of Type 2, as mentioned in Ahn (151), *mut-ki-lul* 'ask-NMLZ-ACC' before Q, which is followed by ha-ni in a medial verb form.

For the parable of the workers in the vineyard in Matthew 20:1–16, there is a similar pattern of difference in the three versions. RT has *ilu-twe* or *kalo-twe* 'saying' before Q, which is followed by *hani* (medial verb form) or *hanila* (final verb form). CT has Q first, then *hako* quote marker, and *mal.hani* 'saying' in the medial clause, and *mal.hayetta* 'said' and *muletta* 'asked' when final. In SNT, QFs occur both before and after Q: *mal.ha-ki-lul* 'say-NMLZ-ACC' four times before Q and then *hayetta* 'did' at the end of the sentence. The same general pattern of difference is found in other texts in the Bible, e.g., Jonah in the Old Testament.

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[5] The two more recent versions, CT and SNT, have used more sentences (13 and 17 sentences) for the parable, compared to RT, which only has three sentences. (The original Koine Greek version has 13 sentences, and various English translations have 13 to 17 sentences.) The earlier version, RT, seems to reflect the clause chaining feature of Korean better, while the other two may be considered rather choppy with shorter sentences.

| **Sp/Ad; prior clauses (medial)** | **Speech verb (medial)** | **Q** | **Speech verb/adv.** | **Speech verb in final clause** |
|---|---|---|---|---|
| [4a] So Ø (Sp) again servants send–*mye* 'while' | | | *ilekhe*<br>'like.this' | *mal.hayetta.*<br>'said' |
| [4b] | | "Q" | | |
| [8a] And Ø (Sp)/to his servants | | | | *mal.hayetta.*<br>'said' |
| [8b–9] | | "Q" | | |
| [11] The king went in … saw a man, Ø (Sp) | [12] *mut-ki-lul*<br>'ask-NMLZ-ACC' | "Q" | *ha-ni*<br>'do-so' | he could say no word |
| [13a] At that time the king/ to the servants | | | | *punpu.hayetta.*<br>'ordered' |
| 13b | | "Q" | | |

***Table 5.** Reported speeches from Matthew 22:1–14 in Standard New Translation.*

Thus, RT follows Types 1 and 2 of the three types developed from Middle to Modern Korean, shown in (3) above. QFs with SV occur together (as in English) in both types, but Type 2 with the second verb after the Q is more frequent.

CT mostly employs Type 3, in which SV are split around the Q. The verb ha occurs after the Q. Type 3 is the predominant pattern in Modern Korean, and CT follows the current day use of Korean, not only in reported speech but in other linguistic features as well.

SNT displays the most prevalent current usage by splitting the QF from the Q and putting it in a separate sentence. It might be possible to view this as a variant of Type 1, although of course the QF and Q are in separate sentences, and so the speech verb in the QF is a fully inflected final verb. This variant is found in all three versions, as well as in many contemporary writings, including fiction. This practice can eliminate the potential processing problem of Type 3 when the S and V are separated too far because of a long intervening Q. NST also uses Type 2 as shown in **Table 5** in v 12, when the king confronts the man who was not dressed appropriately. This is the same form used in H[14] (**Table 1**); it is again used in a confrontational climactic situation. The speaker and addressee are overtly referred to in v 11, which is the prior medial clause. So the excessive reference in a confrontational situation noted by Longacre (1994) may occur in Korean in previous medial clauses, but not necessarily in the QF itself.

3. A CROSSLINGUISTIC COMPARISON OF QUOTATION FORMULAS. Some comparisons may be made regarding QFs in languages with different typological features. Before we do that, we discuss a pattern that is not found in the English text in (2), that is, having the order of VS for the QF after giving the Q first, as in "Q," said John, as a variation of [13]. Such sentences occur frequently as shown from *The Story about Ping* (Flack & Wiese 1961) in [38]–[40].

(4) a. "Ah, a duck dinner has come to us!" said the Boy's father.
b. "I will cook him with rice at sunset tonight," said the Boy's mother.
c. "NO-NO! My nice duck is too beautiful to eat," cried the Boy.

According to several English texts analyzed, this VS order instead of the usual SV occurs only when the Q is given first, and when the subject is a noun or NP. In French, however, even with a pronoun subject, this reversed order occurs regularly, as in *Le Petit Prince* (Saint-Exupéry 1946): "Q," *dit-il* 'said he'. The author used the VS order predominantly when QFs followed the Q, whether a pronoun or a noun phrase, using a dash before the Q without quotation marks, as in (5). The corresponding English translations are given below the French data (from Saint-Exupéry 1974). The QFs are underlined.

(5) a. – *Adieu, dit-il à la fleur.*
"Goodbye," he said to the flower.
b. – *Sur quelle planète suis-je tombé? demanda le petit prince.*
"What planet is this on which I have come down?" asked the little prince.
c. – *Sur la Terre, en Afrique, repondit le serpent.*
"This is the Earth; this is Africa," the snake answered.

While the VS order for QF was mostly kept in the English translation, as in (5)b, it is occasionally changed to SV, as in (5)c. The change to the SV order involving the pronoun subject, as in (5)a, has been regularly made.

In two Korean translations (Saint-Exupéry 1982 and 2007), QFs and Qs are mostly divided into two sentences, and the order in QFs is always SV. No VS order is found. Due to the verb-final feature of the clause in Korean, the order would be SV, unless the subject is added as an afterthought.

The option of the QF in the middle of Q in English (as in [14] in (2)) is never found in Korean texts. Instead, the second Q occurs in another sentence, or the two parts of Q are combined.

Finally, reported speech patterns in English and Korean are compared from the perspective of linguistic typology. In English, quotation formulas (QF) like *He said* occur before, after, or in the middle of the quote (Q). The subject and verb in the QF stay together as a unit, regardless of their position relative to the Q. This is the tendency shared by head-initial languages, such as French, Biblical Hebrew, Koine Greek, Obolo (Aaron 1992), and Kifuliiru, a Bantu language (Van Otterloo 2008).

Head-final languages with the basic word order of SOV, such as Korean, Japanese, and those in Ethiopia (Longacre 1990), however, have a conflict between two competing motivations: to have the QF together in opposition to the Q, and yet also to end the sentence with the verb. Many of these languages have the option of deleting the subject, thereby starting the sentence with the Q and still ending it with the verb. Or the QF might split around the Q as in Korean and Japanese, or there is a separate sentence each for the QF and Q.

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In Korean, the conflicting motivations are shown in historical changes in reported speech. In Middle Korean, QFs were preposed to the Q, but the verb, since it was before the Q, was in a medial verb form. Gradually, a generic speech verb was added after the Q, creating a structure with two speech verbs around the Q. Then in Modern Korean, the prequote speech verb drops out. This causes the subject and the verb in QFs to split around the quote, S "Q" V, but it conforms to the verb-final feature of the language. Now the subject and verb of QFs are not together any more, and when the quote in the middle is long, the detached S and V may create a processing difficulty. Contemporary writings such as fiction tend to split QF and Q into two separate sentences, possibly to overcome the processing problem and also to keep the verb in the final position of the clause in both QF and Q sentences. In addition, this pattern makes it possible to keep the QF as one unit. It is interesting to note that a dominant pattern of the earlier period, two speech verbs occurring redundantly, has been retained in current use as a special marker of confrontation.

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# STANDARDS OF PROOF IN APE LANGUAGE STUDIES: THE CASE OF BOW AND LITERACY

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**Abstract:** Objective evidence of spontaneous, contextual use of language in ape language studies requires replicable results, significant samples, statistical analysis and double blind testing. If the results are replicable and predictable, then the accusation of rote training can be leveled. If the evidence arises spontaneously in context, then it may be merely anecdotal. The requirements create insurmountable difficulties where proof is concerned. This paper offers evidence that Bow, a male common chimpanzee, is the author of his own messages through the following circumstances: (1) Bow spells out information not known to his interlocutor; (2) Bow spells out in Hebrew with an interlocutor who is not a Hebrew speaker when there is no Hebrew speaker present. A new test for substantiating evidence of language use is suggested: namely, that if no other reasonable explanation for language output by a non-human is available, then the use of language is established.

**Keywords:** ape language studies, chimpanzees, Hebrew, English, apes and literacy, standards of proof, bilingualism in non-humans, bilingualism as a method of double-blind testing.

**Languages:** Chinese, English, Hebrew.

## 1. ANIMAL COMMUNICATION STUDIES.

### 1.1. HISTORY OF THE FIELD.

The scientific community has not agreed on a standard, that if met, would definitively prove that an ape has acquired language. "[I]f at the end of extensive experimental research, a reputable research team proposes a definitive answer [to one of the key questions in ape language research] … there are no agreed methods by which the scientific community can determine whether that conclusion is or is not well-founded" *(*Savage-Rumbaugh, Shanker *&* Taylor 1998:142). While the history of inquiry into the language potential of non-humans is dominated by the idea of there being a sharp dividing line between humans and other animals (Sutcliffe 2009), ape language researchers are expected to show objective proof. The obstacles they face are in some ways similar to the difficulties of proving the language abilities of an inarticulate human child.

The problem of proving that an ape has acquired language is not essentially different in theory from the problem of proving that a human being has acquired language. Some human beings face a similar fight for the recognition of their own independent communi-

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cation. As long as they use their articulatory apparatus to speak out loud, most people enjoy the benefit of the presumption that they are in fact speaking and not just making noises that sound like speech. People with normal speech are not required to prove anything. But for those with neural damage that prevents them from having normal control over their movements, the path to recognition that they do understand language and are able to use it is a difficult one. The controversy surrounding facilitated communication has not yet been resolved (Biklen & Cardinal 1997).

In the 1960s and 1970s, research into teaching non-humans a human language was considered a legitimate field of endeavor, and there were many such experiments, conducted with apes (Fouts & Rigby 1977, Gardner et al. 1989, Patterson & Linden 1989), as well as with other animals, such as parrots (Patterson & Pepperberg 1994; Pepperberg 1999, 2009) and dolphins (Herman 2009).

One of the most successful projects of this period was the work of Beatrix and Allen Gardner with a female chimpanzee by the name of Washoe. Washoe was brought up in a human home, using a method called cross-fostering. She was taught American Sign Language and acquired an impressive vocabulary that she could use in context to express her wishes, desires and opinions. (Gardner et al. 1989, Fouts & Mills 1997)[1]

Herbert Terrace attempted a similar experiment with a male chimpanzee whom he named Nim Chimpsky, after Noam Chomsky. Like the Gardners, it was Terrace's intention to raise Nim in a human home and to teach him sign language. However, Nim's early experiences were very different from Washoe's. Terrace did not volunteer to adopt Nim himself. He was an unmarried man, and he did not feel up to the challenge of raising a baby chimpanzee by himself. Instead, he asked a former research assistant of his to adopt Nim into her home. However, conflicts concerning parenting methodology and other matters arose, and Nim was abandoned by his adoptive mother at an early age and brought up by a sequence of different assistants, none of whom served as the central figure in Nim's life. Deprived of a stable family life, Nim experienced attachment issues very similar to those that human children deal with when they are denied a strong relationship with a reliable parent. (Hess 2008 )

After failing to secure continued funding, Terrace ended the project and began to review the tapes of Nim signing. He came to the conclusion that Nim was not using language spontaneously to express himself. It seemed to him that Nim was signing to please his trainers. Soon thereafter, researchers working in animal communication were invited to a conference which retrospectively is known as The Clever Hans Conference. There, not only were Terrace's conclusions about Nim Chimpsky made public, but it was suggested that Washoe, and all other animals engaged in language experiments, were also not actually using language. They were all compared to Clever Hans, a German horse who had used cues from humans in order to answer math questions correctly. In 1907 it had been discovered that Clever Hans could answer questions correctly only when the human with him knew the answer and Hans could see the human. According to Savage-Rumbaugh and Levin:

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[1] For instance, when she found herself in a barren cage after the end of the experiment, Washoe signed "ROGER ME OUT. ROGER YOU ME OUT." (Fouts & Mills 1997:122). The language experiment was over. She was signing not for a reward or to please, but as a way of conveying what she wanted.

> For some time during the mid-1970s, Thomas Sebeok, a linguist at Indiana University, had been expressing strongly negative views on ape language research. And in May 1980 he organized a conference under the auspices of the New York Academy of Sciences, which made his position brutally clear. The conference was called "The Clever Hans Phenomenon: Communications with Horses, Whales, Apes and People" [...] There was even a move, fortunately thwarted, to have the conference vote for a ban on the research. At a press conference at the end of the meeting, Sebeok expressed his views most stridently of all: "In my opinion, the alleged language experiments with apes divide into three groups: one, outright fraud; two, self-deception; three, those conducted by Terrace."[2] (1994:50–51)

The Clever Hans conference set a new set of standards for animal language experiments, and in particular those involving apes. Evidence of language competency in a conversational context became suspect, because of possible cuing. Tests had to be objective, double blind, infinitely replicable, and involve predictable results. The Clever Hans demonstrations of arithmetic skill had in fact been objective (only one correct answer), infinitely replicable (you can always find one more question to ask), and predictable (if the horse knew his arithmetic, he could always get it right.) The problem was that the tests were not double blind. The humans with the horse knew both the questions and the answers. From this point on, to prove that a non-human had acquired language, a researcher had to present the subject with questions whose answers could be verified independently, distinct questions that would allow for a potentially unlimited number of trials, and that neither the tester nor the subject knew the answers to in advance.

1.2. THE ADVANTAGES OF AUDIBLE SPEECH FOR COUNTERING THE ACCUSATION OF CUING. Experimenters who work with parrots operate under different constraints from those that apply in the case of apes, because the articulatory apparatus of parrots, while quite different from that of humans, is capable of producing comprehensible speech. (Patterson & Pepperberg 1994, Pepperberg 2009). The other great apes,[3] the gorilla, the orangutan, the common chimpanzee, and the pygmy chimpanzee (AKA bonobo), are not able to produce speech that humans can comprehend. That is why alternative methods of communication, such as sign language or lexigrams, have to be used. The moment it is not

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[2] Terrace's study with Nim was considered neither fraud nor self-deception because Terrace, after terminating the project for lack of funding, retrospectively decided that it had been a failure.

[3] The great apes are members of the family *Hominidae* (hominids). Surviving members of this family are humans (*homo sapiens*), common chimpanzees (*pan troglodytes*), bonobos (*pan paniscus*), gorillas (*gorilla gorilla*), and orangutans (*pongo pygmaeus*). All other hominids have long since gone extinct.

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| Trial | Objects in Set | Question | Response |
|---|---|---|---|
| 1 | Purple key, yellow wood, green hide, blue paper, orange clothes pin, grey box, red truck | What object is grey? | Box |
| 14 | Purple paper, yellow clothes pin, green box, blue truck, orange key grey wood, red hide | What color is truck | Blue |

***Table 1.*** *Representative sets of objects, questions, and responses from Alex, and African Grey parrot. (Reproduced from Pepperberg 1999:137.)*

audible speech, the researcher opens himself up to the accusation that not just the answer itself, but also its linguistic form, is being cued.

Why is audible speech less open to the accusation of cuing? Because the researcher cannot see into the parrot's throat and determine what articulatory gesture the parrot is about to make. Speech is rapid and the means of articulation are usually not visible. Because of this, when a parrot utters a word, the researcher is not likely to have cued the parrot as to which phones or phonemes to use. But when an ape spells out a word, letter by letter, it is more likely that cuing as to individual phonological elements of the word might have taken place. This is the same problem that practitioners of facilitated communication face (Biklen & Cardinal 1997). For instance, consider the representative samples of sets of objects, questions, and responses from Alex, an African Grey parrot, as reproduced in **Table 1**.

It's one thing to be able to determine that a box is grey. It's quite another to know how to say "box" in response to a question like "what object is grey?" Even if Alex could somehow tell that the researcher thought the box was the object that was grey (maybe by the way she was looking at it), she can hardly be accused by her body language to have caused Alex to move his vocal tract in such a way as to produce the word "box."[4] Also, she cannot have clued him into the fact that "blue" was a color in the second question, involving the truck. Maybe the researcher was looking at the truck. But how could that cause the parrot to articulate the syllable of the English word "blue"? Clearly Alex the parrot knew what the word "blue" stood for, and he knew what the word "color" stood for, and he knew that the question "which color?" required an answer that is a color. All of this is quite significant in and of itself. In a study about linguistic ability, the parrot's choice of correct phonemes for pronouncing the correct word cannot be cued by the researcher's inadvertent body language.

1.3. MINIMIZING CONTEXTUAL CUES IN APE LANGUAGE STUDIES. With apes who use lexigrams, the process of testing is considered more suspect, because if the researcher inad-

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[4] Alex had no training on what to do with his articulatory apparatus, which is very different from our own. He had to discover by himself how to go about making a noise that Pepperberg would identify as sounding like the word "box". (Without lips, he had to find a way to make a bilabial). Finding the articulatory to acoustic correspondences was Alex's doing. Pepperberg's explicit instruction to Alex was on semantics.

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vertently looks at the right lexigram for the answer, this might be a cue for the subject, not just for picking out the right answer, but also for picking out the right *word* to stand for the answer. Because of this, researchers in ape language studies are expected to conduct double blind tests, where neither the researcher nor the subject know the question or the answer. Many ingenious methods have to be found to minimize potential cuing.

In one set of experiments, Sue Savage-Rumbaugh hid behind a one-way mirror to minimize cues to Kanzi, an eight year old male bonobo, about what she expected him to do as she gave him novel requests to comply with. An example of such a request is "Can you put the apple in the hat?" In all, 660 such requests were made over a nine month period. Kanzi had never heard these sentences before, and he was requested to perform actions that served no practical purpose. This was evidence of comprehension of English syntax with minimal context. (Savage-Rumbaugh et al. 1993)

Both Sue Savage-Rumbaugh and Kanzi had to exercise extreme patience in order to go through the entire list of novel sentences for purposes of proof. Kanzi performed the actions as he was requested. However, he was not engaged by the tasks. There was no contextual motivation for complying with the requests. This was an artificial set of tasks that Kanzi participated in for purposes of proof. This sort of testing is possible only when the subject is extremely cooperative. Even small human children are not often that compliant. To ask this of a bonobo requires amazing patience on the part of the ape. To require it of a common chimpanzee is daunting. The problem is not one of cognition. It is a matter of impulse control, deferred gratification and interpersonal motivation.

Impulse control means that when a desire, urge or whim occurs to the subject, no promise of future reward or punishment is of use in curbing it. Deferred gratification is the willingness to put off present enjoyment in the hope of gain in the future. Humans are known for their willingness to defer gratification. Most chimpanzees are not. Common chimpanzees, even when they recognize the authority of a dominant conspecific, do all that is in their power to resist having their immediate desires thwarted. They never stop scheming. This is how, after years of being the dominant male, an Alpha is overthrown at the first sign of weakness.

Bow, the male common chimpanzee who is the subject of the current paper, is not cooperative. He spells out words when he wishes to communicate, but he refuses to answer questions that appear to him to be for purposes of testing his knowledge as opposed to genuine requests for information by someone who doesn't know, and he will not comply with a request when he has no immediate desire to do so. This presents considerable difficulties in implementing objective, context free,[5] and replicable tests.

## 2. DIFFICULTIES CONDUCTION DOUBLE-BLIND AND CONTEXT-FREE TESTS WITH BOW.

BOW STARTED SPELLING OUT WORDS IN THE SUMMER OF 2007 at the age of five and a half years. Up to that point, we he was using lexigrams in the standard orthography

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[5] Criticism of Nim Chimpsky included the idea that he was cued as to what to say by conversational context: if he was asked what he would like to play or do, answers were often suggested by the question.

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of Hebrew and English, but little progress was made, because Bow pointed faster than researchers were able to see. The breakthrough came when Bow started taking the researchers' hands and using them as pointing devices, making sure the humans perceived what he was pointing at before proceeding further (Katz 2009).[6] From pointing at words in standard spelling, Bow went on to spell out words by pointing at letters. His achievement is remarkable, but there is a very real problem with eliciting objective proof.

What evidence is there that, with the physical contact between researchers and subject during the process of pointing at letters, the researchers are not inadvertently cuing Bow as to what to say and how to say it?

Bow will not spell when there is no one in the room. Bow will not talk to strangers. He refuses to answer questions that he thinks researchers already know the answer to. He uses language only to communicate, and he cannot be bribed or cajoled to use it for anything else.

However, there is one form of proof available to show that Bow is in fact the author of the words that he spells out and that cuing is not a factor. In the following sections we will discuss two clips[7] in which the words must have come from Bow, and not his human interlocutor, because the human did not know the information that Bow provided and there was no one else present.

3. PROOF THAT BOW IS THE AUTHOR OF HIS UTTERANCES.[8] FIGURE 1 IS A PHOTO OF DELIGHT WANG HOLDING BOW WHILE HIS HUMAN ADOPTIVE SISTER SWORD LOOKS ON. Delight and her mother, June Sun, stayed in Bow's home for a period of six months ending in December of 2003. At the time, Bow was not yet two years old. When the researchers spoke among themselves, they didn't call Delight by her English name. They used her Chinese given name, which is 忻之 [ʃɨnʐɨ].

At the end of August 2007, Eden Michaelov, a summer volunteer with Project Bow, was shown the picture in **Figure 1**. Ms. Michaelov did not know Delight Wang, and she had never heard Delight's Chinese name. She took the sheets from the album containing the photo of Bow, Delight and Sword, and she asked Bow, at a time when no one else was present, what the name of the little girl in the photo was.

If Bow had thought this was a test for purposes of proof, he probably wouldn't have answered. But he took Ms. Michaelov at her word. He knew that she didn't know, and he

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[6] For a complete background, read Katz (2009). Bow was cross-fostered along with a human child two and a half years his senior. Hebrew was the home language. English was spoken outside the home by all others. Lexigrams in the standard orthography of each language were used for Bow to communicate. A lexigram is any visual symbol that stands for a word. What makes it a lexigram is that is recognized as an undivided whole.

[7] The two clips may be accessed on-line at the following locations: *http://www.youtube.com/watch?v=V9fvLyXVWAQ* for Video Clip 07082901–5 and *http://www.youtube.com/watch?v=fWeE3AgveUo&* for Video Clip 08090301–3

[8] The author wishes to thank June Sun, Delight Wang, Eden Michaelov and Katie Thurston for their help and assistance both in working with Bow and in helping to compile the data on which this article is based.

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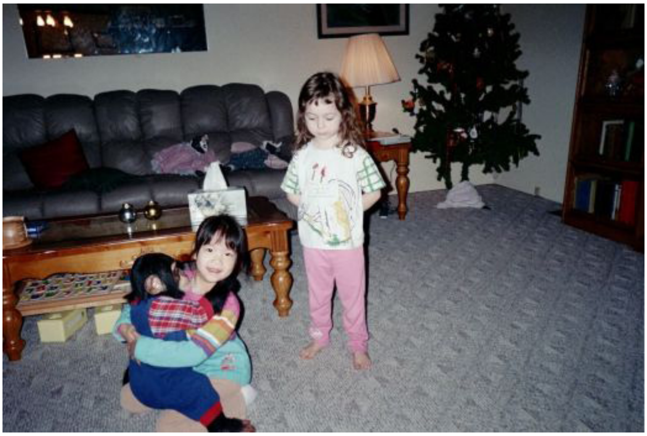

***Figure 1.** Photo of Bow, Delight and Sword that Eden Michaelov showed Bow.*

| Speaker | Hebrew | English Translation |
|---|---|---|
| Eden | אני רוצה לדעת משהו. ראיתי את התמונה הזאת. מי הילדה הזאת ?<br>איך קוראים לה ? זה קשת, נכון ?<br>מי מחזיק את קשת כאן ?<br>מי מחזיקה אותו? זאת חרב. מי זאת ? | I want to know something. I saw this picture. Who is this girl? What is she called? That's Bow, right? Who is holding Bow here? Who is holding him? This is Sword. Who is this? |
| Bow | RH: ש נ | (spells) shin nun |
| Eden | אני לא יודעת. אני לא מכירה אותה. מה השם שלה ? האם אתה מכיר אותה ?<br>זאת חרב, מי זאת ? תגיד ? תגיד לי ! | I don't know. I don't know her. What is her name? Do you know her? This is Sword; who is this? Tell me! |
| Bow | RH: ש נ ג | (spells) shin nun gimmel. |
| Eden | tries to sound it out | (Tries to sound it out.) Shanag? |
| Eden | מה אתה עושה ? תגיד לי ! מה השם שלה ? | What are you doing? Tell me! What is her name? |
| Bow | RH: ש נ | (spells) shin nun. |

***Figure 1.** Transcription and English translation of dialogue in clip 07082901–5*

was willing to tell her. The transcription of Video Clip 07082901–5 (**Figure 1**) shows what happened.

There were three consonants in the Chinese name. In the normal orthography of Hebrew, it is common to specify only the consonants. Bow chose the three Hebrew consonants that most nearly conformed to the Chinese pronunciation (**Figure 2**, overleaf). Hebrew doesn't

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IPA for Delight Wang's Chinese given name:
[ʃ ɨ n ʐ ɨ]
Consonants in the Chinese name:
[ʃ n ʐ]
IPA for consonants chosen by Bow:
[ʃ n g]

***Figure 2.*** *Bow chose the Hebrew consonants that most nearly conformed to the consonants in the Chinese name.*

have a [ʐ] sound, but the gimmel stands for [g] the closest available phoneme, and the one that native speakers normally use to render a [ʐ] in a borrowed word.

The odds that someone selecting three letters out of the twenty-two letter Hebrew alphabet would have chosen this sequence are 1 in 10,648. Since the researcher with Bow did not know the name of the girl in the picture, and nobody else was in the room, the only logical explanation is that the answer came from Bow.

The next example is from the following year. The Project Bow intern in the summer of 2008 was Katie Thurston. She stayed with Bow until the beginning of September 2008. Katie is English, and she had been a student at the University of Edinburgh. Not only did she not speak Hebrew, something that Bow held against her, but her pronunciation of English was not American, and hence unfamiliar. At first Bow mistrusted her. Eventually, though, Bow came to respect and like the new intern, and he began to spell with her. Ms. Thurston even tried to learn a little Hebrew from him, but Bow refused to teach her, claiming that she was "stupid", because she did not know Hebrew.

Instead of helping the new researcher learn Hebrew, Bow, on one occasion at least, tried to mystify her by telling her in Hebrew what she could understand only when spelled out in English. In the clip from September 3, 2008 (see Clip 08090301–3) transcribed in **Figure 3**, Bow told Katie Thurston that he was full in three ways:

1. He used the number 7, which when spelled out makes the word for "sated": שבע
2. He spelled out the word for "full": מלא
3. When she didn't understand the above, he spelled out in English: "I am full."

Ms. Thurston had picked up a little Hebrew in her three months with Project Bow. She knew the words for "Mommy," "Auntie," and "no." But this did not make her a speaker of Hebrew, and she did not understand what Bow was telling her.

The intern did not know that, if spelled out in letters, the Hebrew word for seven was identical in spelling with the word for "sated". She did not know the Hebrew word for "full". There were no others present, besides Katie Thurston and Bow. Is there any better explanation than that Bow was the one who pointed at the letters?

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KATIE: Okay, come on.

BOW: א–מ–א–ל–א–ד–ו–ד–ה
7–7

KATIE: What's seven go to do with anything? Mommy's not Aunty. Seven. That doesn't make sense.

BOW: 7–1–7
מ–ל–א

KATIE: לא!לא! Bow would you like to ask for something more to eat? Boy you've only had an apple and I've put out all this food for you and I don't know why you don't want any. Why don't you want any food Bow? Hmm? Why don't you want any food? Come one, tell me!

BOW: B-E-C-A-U-S-E-E-A-T-I-N-G-A-P-A-P-P <drops Katie's hand>

KATIE: Do you want to say what you want to say properly? Do you want to concentrate and do it? Come on, come on, come on!

BOW: B-E-C-A-U-S-E-I-A-M-F-U-L-L

KATIE: After one apple you're full?

BOW: Y-E-S

KATIE: Are you sure?

BOW: Y-E-S

KATIE: So shall I clear the food?

BOW: Y-E-S

***Figure 3.*** *Transcription of clip 08090301–3.*

4. CONCLUSION. Language use in reality does not consist of answering questions that everybody already knows the answers to, as in the case of most double blind, replicable experiments approved by the scientific community. Real instances of language in action involve the production of spontaneous utterances that convey new information that an interlocutor does not know. Each such event is unique and not replicable. The evidence presented in this paper was of serendipitous occurrences that were in fact double blind – the interlocutor did not know the answer and Bow did not know what he would be asked. The only problem is: each event was unique and non-repeatable.

The following suggested standard might help resolve the problem of proof in ape language studies, as well as in the case of humans using facilitated communication:

> THE BUT FOR TEST: If a conventional association between form and meaning is statistically unlikely to be made randomly, then the association by the subject of

> this form and meaning can be viewed as evidence in favor of spontaneous language use by the subject, when those present with the subject did not know of the conventional association in question.

This test can be used in cases of lack of shared context between the researcher and the subject. It can also be used where the subject is bilingual and the researcher is not, or when the subject is fluent in a language that the researcher does not know. Bilingualism on the part of research subjects, both human and non-human, is a seldom utilized but effective method of reducing contextual cuing without diminishing spontaneity. In this case, the results need not be replicable. They need only be something that could never have happened by chance.

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# COGNITIVE MARKERS OF PRESCRIPTIVISM

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**Abstract:** This paper constitutes a start on a view of prescriptivism from the standpoint of the naive native speaker. Unlike the linguist, the average language user assumes the existence of some kind of centralized language authority. Our goal is to determine via psycholinguistic experimentation the extent to which this assumption is manifested in language behavior. The paper looks first at widely studied correlates with prescriptivism, i.e., the procedural vs. declarative knowledge divide, implicit vs explicit learning, and formal vs. colloquial registers. We then report on a normative survey and production experiment focusing on number agreement with expletive *there* when followed by three distinct noun types. The normative survey confirmed nearly complete adherence to the prescriptive singular/plural distinction, in contrast with markedly lower rates for plural in the production experiment. The latter thus supports the anecdotal observation that speakers today tend to automatically use *is* in less formal registers. A follow-up comprehension experiment using an eye-tracker is expected to bring out processing difficulties involving the three noun types.

**Keywords:** prescriptivism, psycholinguistic, procedural, declarative, expletive *there*, number distinction, collective

Languages: English, Menomini, French

MOST[1] LANGUAGE COMMUNITIES show at least some divergence between actual usage and normative pronouncements regarding usage. This paper describes the beginnings of a cognitive study that deals with the relationship between observed language behaviour and native speaker knowledge of and attitudes toward prescriptive beliefs about usage. Prescriptivism is not simply an obstacle to discovering real language. Evidence from diachronic and socio-linguistic work suggests that normative pronouncements can have an effect not only on native speakers' attitudes or their actual language behaviour but even on language change, as we see in the frequent appearance of hypercorrection.

To wit, Bloomfield 1927 discovered that even illiterate Menomini speakers held strong attitudes toward what they perceived as 'good' and 'bad' usage. English speakers have varying awareness of grammatical thou-shalt-nots. At one extreme are forms like *ain't*, which

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[1] Thanks to Amy Beth Warriner and Megan Vincent for running the experiments, preparing commentary and constructing the graphs.

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even minimally educated speakers at times disparage. At the other extreme are super-standard conventions which only the most punctilious authorities insist on, such as banning *so* when used as a result marker.

This divergence between prescribed norm and everyday speech parallels that holding between linguists and the speaker-in-the-street: linguists assume that prescriptively favouring certain forms would be anathema to their research methods, while non-linguists take it for granted that grammar is in its essence normative. Recently at a restaurant, my sister-in-law queried me when I asked for the cheque rather than the bill: she naturally wanted me as a linguist to tell her which one was the correct word. Every student of linguistics learns to take with a grain of salt naïve speakers' declarations about and reactions to what they have learned in traditional grammar classes. Nonetheless, as a lively exchange on Linguist List showed, it would not be surprising to find that prescriptive dictates do have some effect on the underpinnings of native speakers' language behaviour, in spite of or even because of the ever-present gulf between usage and normative rules.

1.0. CORRELATES OF PRESCRIPTIVISM. We speculate that the very frequently observed normative mindset in native speakers is but a reflection of the role prescriptivism plays in much language processing, an influence which we would expect to be detectable through behavioural experimental methods that are well established in psycholinguistics. Little work in cognitive science has been done on prescriptivism per se, but researchers have clearly shown the relevance of certain polarities that are correlated with prescriptivism and its opposite, i.e. spontaneous, unreflective language processing. These polarities include declarative vs. procedural knowledge, explicit vs. implicit learning, and formal vs. colloquial registers.

1.1. PROCEDURAL VS. DECLARATIVE KNOWLEDGE. Cognitive psychology distinguishes declarative knowledge, i.e. that which a user can talk about and consciously manipulate, from procedural knowledge, which denotes skills that a person can perform but can't necessarily explain how they are performed. The distinction goes back to Ribot (1881), a classic work on memory by a pioneer of neuropsychology. It resurfaced in an amnesia study (Corkin 1968).

The knowledge acquired from an L2 grammar explanation would be declarative while a native speaker's ability to produce utterances without being able to say what grammar rules underlie them would be procedural. Ullman (2001) maintains that the declarative/procedural difference is also implicated in the neurocognitive basis of memory: Language irregularities such as English strong verb forms are purportedly handled via declarative (conscious) memory processes located in the temporal lobes and hippocampus. Experiential facts too, he claims, are stored in this declarative, long-term memory. Linguistic regularities, on the other hand, are purportedly treated via combinatorial rules processed in the frontal lobes and basal ganglia, which are also where other kinds of procedural knowledge like motor skills are handled. Ullman cites evidence from psycholinguistic experiments (e.g.

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frequency and neighbourhood effects), aphasia, developmental effects and neuroimaging studies in support of the declarative/procedural basis of various language phenomena[2].

Like other kinds of declarative knowledge, prescriptively learned language is accessible to consciousness and amenable to verbalization. Lexical facts too are arguably a type of declarative knowledge. Ullman's findings unequivocally place lexical knowledge on the declarative side, but he considers grammar rules to be procedural (grammar rules in the non-prescriptive sense, i.e. those that can be inferred from a native speaker's utterances).

Anecdotal evidence suggests differing degrees for procedural mastery of prescriptively learned material. At one extreme is total automaticity, e.g. mastery of technical jargon by a specialist who uses it constantly. On the other hand, spelling is an area where individual ability is highly variable, while mastery reaches a low-point with purists' super-standard shibboleths like prohibiting 'due to' as a compound preposition, a ban which only some purists heed, and inconsistently at that.

1.2. SECOND LANGUAGE ACQUISITION: EXPLICIT VS. IMPLICIT LEARNING. Is there neurocognitive evidence that L2 learners transform prescriptively learned rules from declarative to procedural knowledge, a transition observable with some students exposed to only traditional teaching? The L2 acquisition literature on explicit vs implicit learning suggests there is, even though it is not a straightforward conversion.

Krashen (1981) maintained that true L2 acquisition is always implicit, i.e. unconsciously realized from meaningful input, much the same as with L1. Paradis (1994) and (2009) maintains that conscious, explicit learning is not directly transformed into automatized, procedural knowledge. Conceding this point, Nick Ellis (2005) argues via evidence from psychology and neurobiology that episodic, explicit learning can have an interface with, and an enduring impact on, long-term implicit knowledge. Among the experiences contributing to explicit learning is declarative pedagogical grammar, which by its nature is prescriptive. Explicit learning takes place in the prefrontal cortex and then the hippocampus, while implicit learning, much slower but constituting by far the most common type of learning, takes place in the sensori-motor neocortical areas, including the basal ganglia, where Ullman localizes proceduralization. In spite of this neural dissociation of the two types of knowledge, numerous second language acquisition (SLA) experimental studies show that explicit L2 learning can facilitate implicit acquisition, (e.g., Hulstijn & de Graaff 1994, Long 1991, Schmidt 1990).

Rod Ellis (2005) showed that implicit and explicit knowledge can be operationally distinguished: Native speakers did significantly better than non-natives on tests bringing out implicit knowledge but the two groups' scores were not significantly different on a metalinguistic knowledge test, i.e. one which aimed at prescriptively acquired material.

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[2] However, for a view which downplays the role of declarative learning in this domain, see Opitz and Friederici (2004), and see also McClelland and Patterson (2002) for evidence of a single connectionist model for both regular and irregular forms.

1.3. FORMAL VS. COLLOQUIAL REGISTERS. It has long been recognized that prescriptive dictates endorse formal, conservative language. Linguists have dwelt on areas where there is a disconnect between spontaneous usage and prescriptivist, often puristic, teaching. Schmidt and McCreary (1977) examines the super-standard extreme of prescriptivism (e.g., always requiring a masculine singular pronoun with a quantifier, as in *Each student handed in his assignment*). They point out how it differs from the typical usage of educated speakers, who routinely manifest variation in the standard register and rarely adhere in spontaneous speech to super-standard norms. One of this project's aims is to determine to what degree natives and non-natives are cognizant of such super-standards. Schmidt and McCreary's subjects also included non-natives, who outperformed natives on tests of super-standard structures, an interesting contrast to Rod Ellis' finding that the two groups did not differ vis-à-vis metalinguistic awareness.

2.0. THE EXPERIMENT. In this study, we begin to explore the influence of prescriptivism on the construction of expletive *there* statements, which, anecdotal evidence suggests, are undergoing in colloquial English a neutralization of the number opposition in the copula, e.g. *There's ants all over the floor.* Through a production experiment, we examined how participants constructed expletive *there* statements based on whether the stimulus contained a count noun, a collective noun or a phrasal collective noun. All the nouns were quantified with expressions like *many, several,* or a numeral. For count nouns this was unexceptional, but for most of the collective nouns, the result was potentially a conflict between the plural sense of the quantifier and the unitary sense of the noun, e.g. *four faculty, several staff.* Note that we excluded collective nouns that can occur in the plural, like *teams* and *groups.* Phrasal collectives, as described in Schmidt and McCreary (1977), consist of a quantified and hence plural count noun which can however be interpreted as one entity, typically a single chunk of time or money, as in *three days* or *five dollars*, versus *five loonies* (the Canadian dollar coin), where the semantic plurality (five one-dollar coins) trumps any collective sense of a single amount of money. The experiment employed 24 critical sentences (see Appendix), which could appear in each of the three versions (count, collective, or phrasal collective).

To begin, we performed a normative study in which we asked 12 psychology majors, all native speakers, to mark on a survey whether for each of the sentence fragments (plus 48 fillers) they would start the sentence with *there is* or *there are*. These surveys were used as an indication of the underlying prescriptive attitudes towards the construction of expletive *there* statements in the student population.

We then asked 12 different undergraduate native speakers to participate in a production experiment. In this case, the sentence fragments were presented to participants on a computer screen for a short time, mathematically determined to ensure that the sentence fragments were displayed only long enough for participants to read and comprehend them. After each sentence fragment was displayed, an exclamation point appeared on the screen. Upon viewing this exclamation point, participants were asked to verbally produce a *there* statement which would complete the previously presented fragment. We recorded the participants' responses and noted if the participant produced a singular or plural form of

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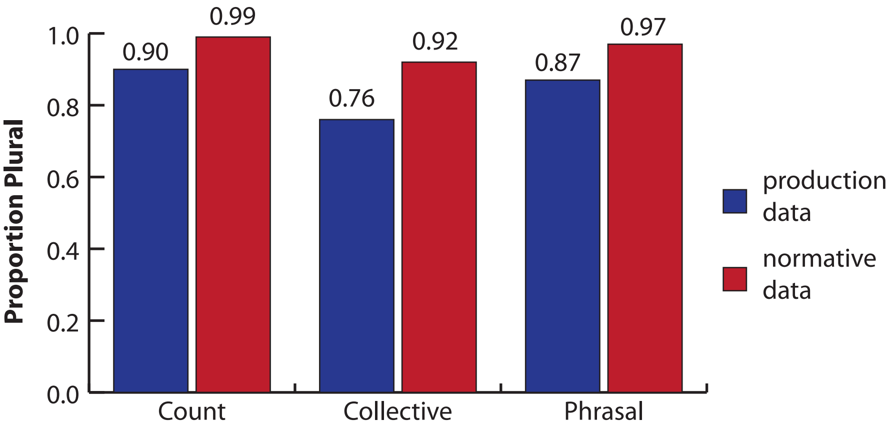

***Figure 1.*** *Proportion of plural: Survey vs. Production Experiment.*

*be*. Three lists were created, in which each item appeared in each of the three noun types across lists. Each participant saw one list, in which there were equal numbers of sentence fragments in each of the noun conditions. Thus, the factor of noun type was both within-subject and within-item, counterbalanced across lists. The critical sentences were also interspersed with fillers.

2.1. RESULTS. When we analyzed the surveys from our normative study, we found that the plural copula was preferred 99% of the time when followed by a count noun, 92% if the noun was collective and 97% for stimuli containing a phrasal collective. These results suggest that when participants are asked to consciously complete sentence fragments they follow standard agreement, totally consistent with prescriptive dictates.

However, in the production experiment, participants produced plural copula 90% of the time for count nouns, 87% of the time for phrasal collective nouns and 76% of the time for collective nouns. A series of planned t-tests on the proportion of plurals showed that participants produced more plurals with count nouns than with mass nouns ($t(11) = 4.90$, $p < .001$), more plurals with phrasal nouns than with mass nouns ($t(11) = 2.66$, $p = .01$, but equivalent numbers of plurals for count and phrasal nouns ($t(11) = .60$, $p = .28$). **Figure 1** shows the comparison percentages between the survey and the production experiment:

2.2. DISCUSSION. We thus found a greater variability in the use of plural and singular copula in the production experiment than in the normative study. It is clear that participants do not inevitably adhere to prescriptivist agreement rules when using expletive *there.* In particular, they would complete a collective sentence fragment with a singular copula 24% of the time, as opposed to only 10 and 13% with a count noun or phrasal collective noun respectively. The greater singular/plural variation for collectives likely stems from their lack of overt morphological marking of number.

3.0. CONCLUSIONS. Given the small number of subjects in our normative survey and the experiment, this is clearly a pilot study. Some of our findings, such as the near-universal preference for the plural copula in the normative survey versus the somewhat higher incidence of singular in the experiment parallel the gulf between prescription and usage that linguists have long assumed. Nonetheless, it is our conviction that the informal observation which is often the empirical basis of linguistics needs to be bolstered with hard quantificational data. Moreover, mere anecdotal observation can be misleading: We notice what is striking, in this case violations of prescriptive rules, far more than routine compliance with the rules. Furthermore, it is unlikely that simple observation would bring out processing differences such as those noted with collective nouns.

On the other hand, data from oral corpora would also be invaluable to complement experimental findings, especially to test the anecdotal impression that number agreement in expletive sentences is giving way to an invariable "singular" verb form in colloquial registers. No doubt corpora are a useful empirical tool, but they are not sufficient because, like anecdotal observation, they don't easily reveal how processing works. For example, a corpus can't show to what extent the language user focuses on the noun to resolve the number of the verb form.

This paper is just a start at exploring to what degree prescriptivism affects cognitive aspects of language. The next stage in the work on expletive sentences will be an eyetracking study aimed at pinpointing areas of processing difficulties, inferred through longer gaze times when the subject is reading a stimulus sentence. We also plan to use more subjects in order to reduce noise in the data and bring out sharper differences between the normative survey and the experiments. We will also determine whether getting rid of the quantifier has an effect on agreement, especially with collective nouns. As already suggested, it would also be very useful to compare the experimental findings with data from corpora.

In the longer term, we will look at areas where native speaker awareness of prescriptivism is higher than with the expletive *there* structure, notably case variation with personal pronouns in coordinate NPs, as in *between you and I*. Also planned is a comparison between English and French prescriptivism, which will involve an eyetracking study focusing on French past participle agreement.

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## APPENDIX

These are the critical stimuli used in the production experiment. Wherever possible, the three sentences of each group contain the same number of syllables.

(1) There is/There are still 3 skirts left. (regular count)
There is/There are still 3 beer left. (collective/mass)
There is/There are still 3 days left. (phrasal collective)

(2) There is/There are many victims missing.
There is/There are many police missing.
There is/There are many euros missing.

(3) There is/There are a few cards still unaccounted for.
There is/There are a few aircraft still unaccounted for.
There is/There are a few days still unaccounted for.

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(4) There is/There are a lot of outstanding kids.
There is/There are a lot of outstanding infantry.
There is/There are a lot of outstanding hours.

(5) There is/There are 2 professors that we should investigate more thoroughly.
There is/There are 2 faculty that we should investigate more thoroughly.
There is/There are 2 centuries that we should investigate more thoroughly.

(6) There is/There are several supervisors to add.
There is/There are several military to add.
There is/There are several milliseconds to add.

(7) There is/There are 5 soldiers unaccounted for.
There is/There are 5 Pepsi unaccounted for.
There is/There are 5 dollars unaccounted for.

(8) There is/There are several clues we have to locate.
There is/There are several personnel we have to locate.
There is/There are several acres we have to locate.

(9) There is/There are always some hitches to worry about.
There is/There are always some cavalry to worry about.
There is/There are always some inches to worry about.

(10) There is/There are only 4 assignments left.
There is/There are only 4 royalty left.
There is/There are only 4 seconds left.

(11) There is/There are 6 books we'll have to add.
There is/There are 6 lemonade we'll have to add.
There is/There are 6 centimetres we'll have to add.

(12) There is/There are many bugs to eliminate.
There is/There are many spam to eliminate.
There is/There are many days to eliminate.

(13) There is/There are at least 100 wine boxes that we've lost.
There is/There are at least 100 head of cattle that we've lost.
There is/There are at least 100 hours of work that we've lost.

(14) There is/There are many exasperating periods in my life.
There is/There are many exasperating clergy in my life.
There is/There are many exasperating hours in my life.

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(15) There is/There are 3 freshmen and 5 seniors left.
There is/There are 3 navy and 5 army left.
There is/There are 3 minutes and 5 seconds left.

(16) There is/There are 20 knights still to come.
There is/There are 20 cast still to come.
There is/There are 20 cents still to come.

(17) There is/There are about 10 soldiers to protect.
There is/There are about 10 cavalry to protect.
There is/There are about 10 kilometres to protect.

(18) There is/There are several children lost.
There is/There are several crew lost.
There is/There are several meg lost.

(19) There is/There are 8 accounts to get rid of.
There is/There are 8 artillery to get rid of.
There is/There are 8 hours to get rid of.

(20) There is/There are 20 files to get through.
There is/There are 20 staff to get through.
There is/There are 20 miles to get through.

(21) There is/There are just 5 vets that might be unreliable.
There is/There are just 5 help that might be unreliable.
There is/There are just 5 months that might be unreliable.

(22) There is/There are 3 cases to bring out.
There is/There are 3 Ginger Ale to dispose of.
There is/There are 3 pounds to dispose of.
(23) There is/There are still a lot of pictures for us to recover.
There is/There are still a lot of software for us to recover.
There is/There are still a lot of dollars for us to recover.

(24) There is/There are 15 campers still to check.
There is/There are 15 poultry still to check.
There is/There are 15 kilos still to check.

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# THE ACQUISITION OF VOWEL NASALIZATION: THE CASE OF SOUTHERN FRENCH AND ALSATIAN SPEAKERS

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**Abstract:** The second language acquisition of Standard French nasal vowels by native speakers of two language varieties that have only phonemically oral vowels shows that the acquisition of vowel nasality involves the same two paths as borrowing, namely adaptation through denasalization to native V or VN, depending on whether the native dialect or language allows for VN sequences. From then on, acquisition proceeds in the opposite order as denasalization, that is as V > V > V or as VN > VN / $V^N$ > $V^N$ > V. While the second of these acquisition patterns corresponds to the typical development of conditioned vowel nasalization in languages, the first does not. It is suggested that the acquisition of unconditioned vowel nasality exemplified by the first of these acquisition patterns is only possible in the presence of a constant accurate model.

**Keywords:** nasal vowels, nasality, (un)conditioned vowel (de)nasalization, second language acquisition, language contact, borrowing, dialect, sociolect

**Languages:** Romance, French, Standard French, Southern French, regional French, Middle French, Old French, Occitan, Provençal, Languedocien, Latin, Spoken Latin, US English, Australian English, German, Standard German, Southern German, Alsatian, Moroccan Arabic, Fula, Futankoore

The present study looks at the second language acquisition of nasal vowels, in particular Standard French nasal vowels, by native speakers of two language varieties that have only phonemically oral vowels. One of the two is a French language variety spoken in southeastern France; the other is a German language variety spoken in the Alsace region of northeastern France. The study tests two predictions which derive from universalist work on the development of nasal vowels in languages, as well as their borrowing into other languages. The first predicts that the acquisition of vowel nasality involves the same starting point identified by Paradis and Prunet (2000) for the borrowing of nasal vowels, namely adaptation through denasalization to native V or VN, depending on whether the native (borrowing) dialect or language allows for VN sequences. The second predicts that, from then on, acquisition proceeds in the opposite order as denasalization, that is, respectively as V > V > V or as VN > VN / $V^N$ > $V^N$ > V.

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1. THE DEVELOPMENT OF NASAL VOWELS. The development of nasal vowels over time in languages has been found to involve a series of predictable stages which typically include the following: VN > VN > $V^N$ > V (e.g., Lightner 1970; Foley 1975; Ruhlen 1978; Fagan 1990; Hajek 1997:54–75; Sampson 1999:25–28). A language variety whose history illustrates all these (not strictly chronological) steps, including N-attrition and N-loss, is Standard French (e.g., Spoken Latin *bonu(m)* [bIJnu(m)] > French *bon* [bõ][1]). U.S. and Australian English, on the other hand, are currently at the contextual assimilation stage, with the beginning of N-deletion in colloquial speech before coronal stops which enjoy an unmarked status (e.g., U.S. English *can't* [kænt] > [kæt] before coronal stops, compared to *and* [ænd] or *can(s)* [kæn(s)] elsewhere (Schourup 1972:536).

In turn, in some language varieties, vowel nasalization may itself be followed by denasalization which typically takes the form of a weakening, possibly all the way to the outright loss of nasality. This can occur before N-deletion, as in Middle French before syllable-initial (and thus preserved) nasal consonants such as Spoken Latin *bona* [bIJna] 'good' fem. > Old French [bõnə] > Middle French [bIJnə]. Or it can happen after N-deletion, whereby phonemic nasality on the vowel can undergo some weakening or disappear altogether (V > V > V), which can be accompanied by restructuring to VN sequences (V > $V^N$ > $V^N$ / VN > VN). An example of the former type would be Latin *ben(e)* > Languedocien *ben* > *bẽ*$^{\text{ŋ}}$ > *bẽ* > *be*. An example of the latter would be Latin *plen(u)* > nasalization: [plẽ ] > plẽ > denasalization: [ple ] or [plej] in some dialects of the Landes area in France (Sampson 1999:157).

2. THE TREATMENT OF NASAL VOWELS IN LANGUAGE CONTACT SITUATIONS. Both forms of denasalization, namely simple loss of nasality (V > V > V) and additional restructuring to VN sequences (V > $V^N$ > $V^N$ / VN > VN) , also occur commonly in language contact situations that involve borrowing from a language with phonemically nasal vowels into one without such vowels. In particular, Paradis and Prunet (2000) argue that simple loss of nasality occurs when the borrowing language has a constraint against VN sequences; and restructuring occurs when it does not have such a constraint.[2] Examples of the former include French loanwords in Moroccan Arabic (MA) like French *(l')assurance* [asyrɪ̃s], *pinceau* [pꞌnso] → MA [las rɪ̃ns]/[lasˈrɪ̃ns], [pꞌnns ] or in Fula as spoken in parts of Senegal and Mauritania (Futankoore dialect) like French *continent* [kIJtinɪ̃] → Fula [kIJntinan]. Examples of the latter include the final syllable in French *conférence* [kIJferɪ̃s] → Fula [kIJŋfꞌnras] because Fula allows syllables closed by a single consonant (that is, unbranching codas: CVC), but, unlike MA, it does not allow syllables closed by more than one consonant (that is, branching codas: CVCC). If restructuring would result in a branching coda, as in Fula *[kIJŋfꞌnrans], nasality is lost instead (Paradis & Prunet 2000:327).

The present study looks instead at the second language acquisition of Standard French, in particular Standard French nasal vowels, by native speakers of language varieties that have only phonemically oral vowels. The predictions tested are (1) that the acquisition of vowel nasality involves the same two paths as borrowing, namely adaptation through denasalization to native V or VN, depending on whether acquisition begins with adaptation to native V or VN; and (2) that, from then on, acquisition proceeds in the opposite order as denasalization, that is as V > V > V or as VN > VN / $V^N$ > $V^N$ > V. While the second of these acquisition patterns corresponds to the typical development of vowel nasalization in languages, the first does not.

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[1] English glosses are dispensed with, since the study is phonological in nature, rather than lexical.

[2] See Laeufer (in press) with evidence for a number of other potentially intervening factors.

3. THE ACQUISITION OF PHONEMICALLY NASAL VOWELS. In particular, two illustrative examples from published sources are looked at more closely. One involves the acquisition of Standard French, in particular Standard French nasal vowels, by native speakers of Southeastern varieties of French, where in the local dialects nasality is nowadays only allophonic/conditioned and weaker than in (northern) Standard French (thus, VN or $V^N$). In Southeastern French, the acquisition of Standard French strongly nasal vowels is therefore predicted to take the path of restructuring to VN followed by conditioned vowel nasalization. The other illustrative example involves the acquisition over time of Standard French, in particular Standard French nasal vowels, by native speakers of the Alsatian dialect of German spoken in the Alsace region located in France across from the southwestern border of Germany. Alsatian has only oral vowels, and the acquisition of nasal vowels in the Northeastern French spoken in Alsace includes the path of denasalization to V followed by unconditioned vowel nasalization.

3.1. SOUTHEASTERN FRENCH. Following a policy begun in the seventeenth century of linguistic unification and leveling through promoting the standard over regional dialects and local patois, (northern) Standard French has successfully implanted itself throughout France. Not only have dialects undergone the influence of the standard superstratum, but, beginning sometime after WWII, convinced of the low prestige of their mother tongue, a number of educated parents have not passed on their native language variety to their children, as has also been the case with the Alsatian dialect discussed below. Nevertheless, throughout the centuries, the local language varieties have also influenced the variety of Standard French spoken in a particular area and resulted in various regional varieties of Standard French.

The development of nasal vowels has been more limited in the south than in the north of France over the centuries (e.g., Sampson 1999:138–157). In particular, in the southeastern (Provençal) and south-central dialects (Languedocien), nasality is nowadays only allophonic and weaker than in northern French dialects (VN or $V^N$). Of interest to this study are the realizations of nasal vowels in the regionally colored version of French spoken in the south of France. The discussion is limited to the Provençal area, in particular the smaller cities of Briançon in the northern Provençal area and Aix-en-Provence in the southern Provençal area, for which there are book-length studies (Violin 2001 and Taylor 1996, respectively). Both studies are based on phonetic transcriptions of audio recordings of spontaneous conversations in French by a diverse informant group. Few of the (older) speakers were also fluent in the Occitan dialect, and all of those who were, were bilingual in Occitan and regional French.

In her somewhat more geographically mobile informant group, Violin (2001) found a majority of nasal vowel realizations in Briançon French to be similar to those of Standard French as far as vowel quality and nasalization is concerned. Such strong phonemically nasal vowel realizations are particularly common among working-class (25–55 years of age), more educated (high school diploma or above (Bac+)), and more mobile/less sedentary speakers. In the remaining variants used mostly by less mobile and less educated speakers, a more or less nasalized vowel (V ~ V ~ V) is followed by a more or less full (unreduced) nasal consonant (N ~ $^{\text{N}}$), and the vowels often differ from Standard French nasal vowels in terms of vowel quality as well (e.g., [eN] or [ẽ$^{\text{N}}$] for Standard French [ˈn]). Such realizations result from the restructuring of Standard French V into biphonematic sequences. In the majority, the vowel is strongly nasalized (V$^{\text{N}}$). At the other extreme, in the least frequently occurring restructured realizations, phonologically and phonetically oral vowels are followed by unreduced nasal consonants (VN). Furthermore, the restructured nasal consonant is homorganic with a following oral stop within and across words, and with a following fricative within a same word (e.g., before stops, *chanter* [an] ~ [Ĩn] / [Ĩ$^{\text{n}}$] ~ [ɪ̃$^{\text{n}}$]; before fricatives, *enfin* [am] ~ [Ĩm] / [Ĩ$^{\text{m}}$] ~ [ɪ̃$^{\text{m}}$]). Elsewhere it is neutralized to a velar default place of articulation, that is, [ŋ] or [$^{ŋ}$] (e.g., pre-pausally, indicating only the two extreme realizations, *le temps* [aŋ] ~ [ɪ̃$^{ŋ}$], *enfin* [eŋ] ~ [ˈn$^{ŋ}$]; word-finally before a continuant, *non a* [IJŋ] ~ [õ$^{ŋ}$], *dedans y a* …[aŋ] ~ [ɪ̃$^{ŋ}$]); word-medially before a sonorant, *pissenlit* [aŋ] ~ [ɪ̃$^{ŋ}$], *enrhumé* [aŋ] ~ [ɪ̃$^{ŋ}$]). N-attrition and N-loss start in the (non-assimilatory) environment before continuants, rather than word-finally where /ŋ/ is preserved longer because it serves as a regional (and social) marker (e.g., *chanson* [ ansIJŋ] > [ Ĩ$^{\text{n}}$soŋ] > [ ɪ̃sõ$^{ŋ}$], *enfin* [amfeŋ] > [Ĩ$^{\text{m}}$feŋ] > [ɪ̃fe$^{ŋ}$]).

The variant pronunciations found for Standard French nasal vowels in the regional Southern French spoken in the city of Briançon therefore suggest the following synchronic sociolinguistic acquisition continuum across contexts and positions in the word, from farthest to closest to the Standard French model: VN/Vŋ → VN/Vŋ / V$^{\text{N}}$/V$^{ŋ}$ → V$^{\text{N}}$/V$^{ŋ}$ → V. Importantly, these variants correspond to the different steps in the typical development of conditioned vowel nasalization in languages. In addition, in reverse order, they correspond to the successive stages commonly encountered in languages during the loss of distinctive nasalization through restructuring.

In her somewhat less mobile informant base in the city of Aix-en-Provence, Taylor (1996) likewise found the high school graduating exam (Baccalauréat or Bac) to be the cutoff point beyond which Aix residents tend to pronounce nasal vowels without a regional southern accent. Here also, lower levels of education correspond to a range of successive approximations to Standard French nasal vowels, both as far as nasality and vowel quality are concerned. The most common involve an oral or partially/weakly nasalized vowel followed by a nasal consonant. The vowel typically differs in quality from Standard French nasal vowels and can be a simple vowel as in *brun* [øŋ] or [œ$^{ŋ}$], or a diphthongized or so-called ‘kinetic vowel’ articulation which moves from a vowel to a high vocalic “glide in the direction of the velum” as [i]/[$^{\text{i}}$] in *brun* [øiŋ] or [ø$^{\text{i}ŋ}$] (Taylor 1996:45). The following nasal consonants range from full nasal segments following oral vowels (VN) through weakened/reduced nasal segments following partially nasalized vowels (V$^{\text{N}}$), all the way to barely perceptible nasal occlusions (transcribed here in parentheses) following fully nasalized vowels ($V^{(N)}$).

The successive approximations to Standard French found in Aix are described as a (mostly social) acquisition continuum from VN sequences, where nasality is entirely cued by the nasal consonant, through partially nasalized $V^{N}$ and fully nasalized $V^{(N)}$, and ultimately to fully nasal V, where nasality is increasingly cued by the vowel. While no speaker group uses a single variant to the exclusion of the others, a little over a third of the residents of Aix primarily use oral vowels (VN or, as seen below, V), close to a third primarily use partially/weakly nasalized vowels ($V^{N}$), and close to a third primarily use fully nasalized ($V^{(N)}$) or nasal (V) vowels. The $V^{N}$ variant emerges as the regional standard, next to nonstandard regional VN and standard French V. Contrary to the other variants, the regional standard reflects a certain level of education while also preserving and expressing regional loyalty, as the residual nasal appendage has come to serve as a regional (as well as social) marker.

Word-medially, the nasal consonant assimilates to the place of articulation of a following oral consonant (e.g., before stops, *trembler* [tramble] ~ [trĨ$^{m}$ble] ~ [trɪ̃$^{(m)}$ble]; before fricatives, *changer* [ a e] ~ [ Ĩ e] ~ [ ɪ̃$^{( )}$ e], ***en**fin* [aΩfeŋ] ~ [Ĩ$^{Ω}$feŋ] ~ [ɪ̃$^{(Ω)}$fn$^{(ŋ)}$]). In the context before oral consonants, homorganic nasal consonants distinguish Southern French as spoken in Provence from the typical Provençal dialect of Occitan which generalizes V[ŋ] to most positions (e.g., Coustenoble 1945, Séguy 1950:31–34). Before (surface) vowels and vocalic glides, the nasal surfaces as the non-assimilatory velar nasal (e.g., *en haut* [aŋo] ~ [Ĩ$^{ŋ}$o] ~ [ɪ̃$^{(ŋ)}$o], *en Wallon* [aŋwallǁŋ] ~ [Ĩ$^{ŋ}$waloŋ] ~ [ɪ̃$^{(ŋ)}$walõ$^{(ŋ)}$]. As expected, in so-called liaison (word-linking) contexts, final nasal consonants are resyllabified with the following word, thereby becoming initial (e.g., *bien entendu* [bje nantandy] ~ [bje nĨ$^{n}$tĨ$^{n}$dy] ~ [bj'n nɪ̃$^{n}$tɪ̃$^{n}$dy]). As also expected, in word-final position, the nasal surfaces as the velar nasal (e.g., *thym* [teŋ] ~ [te$^{ŋ}$] ~ [t'n$^{(ŋ)}$], *pan* [paŋ] ~ [pĨ$^{ŋ}$] ~ [pɪ̃$^{(ŋ)}$]). In other words, as in early times in Alsatian described below, wherever the (partly language-specific) conditions are not met for consonantal assimilation to occur, the nasal consonant typically surfaces as the velar nasal.

Here also, the biphonematic sequences form an acquisition continuum as they range from an oral vowel + nasal consonant through a partially nasalized vowel + nasal offglide to a fully nasal vowel with or without residual consonantal nasal element (e.g., *brun* [brøŋ] ~ [brœ$^{ŋ}$] ~ [brœ$^{(ŋ)}$], *fond* [flǁŋ] ~ [fo$^{ŋ}$] ~ [fõ$^{(ŋ)}$]).

Excluding for the time being Speaker Group 1b discussed below, the Southern French VN to V acquisition continuum for Standard French nasal vowels as spoken in Aix-en-Provence can thus be summarized as VN/V[ŋ] → VN / $V^{N}$ → $V^{(N)}$ → V, which is basically identical to the acquisition continuum manifest in Briançon French and, like it, is very much in line with the findings and predictions of universalist theories of vowel nasalization. Alternatively, as in Briançon, in reverse order, the constitutive steps correspond to the successive stages predicted by universalists to occur in languages during the loss of distinctive nasalization through restructuring.

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3.2. ALSATIAN. The other illustrative example involves the acquisition of French nasal vowels by native speakers of the Alsatian dialect of German spoken in the Alsace region located in France across from the southwestern border of Germany. Administratively speaking, Alsace became affiliated with France at the end of the Thirty Years' War in 1648. As in the Southern French case, of interest to this study are the realizations of nasal vowels in the regionally colored French spoken in Alsace.

Unlike a number of dialects in southwestern Germany, Alsatian did not itself develop nasal vowels. Expectedly, in their accented French, Alsatians at first restructured French nasal vowels to VN sequences which also occur in native Alsatian. In non-assimilatory environments, N was realized as velar [ŋ] (e.g., from a 1816 play by the Alsatian playwright Arnold, French *On n'entend rien* → Alsatian <Ong nangtang riäng> or French *Montons donc sans façon* → Alsatian <Mongtong dong sang fassong>, where <ng> represents [ŋ]).

A century later, at the turn of the twentieth century, a new single oral vowel (V) had appeared for French nasal vowels (Roos 1903). It coexisted and competed for some time with the existing VN pattern before replacing it. The change appears to have started in the non-assimilatory environments where VN had been realized as V[ŋ]. As argued in Laeufer (in press), Alsatians switched adaptation patterns for French nasal vowels from VN to V as a hypercorrect realization in the second half of the nineteenth century, when elementary school instruction became obligatory in Alsace and was delivered in French. Even though the teachers were not always native speakers of French, but (accented) Alsatian speakers of French, French school instruction provided more regular exposure to French as well as more widespread and extensive second language acquisition of French in Alsace. From then on, the acquisition of French nasal vowels followed the V > V > V path.

As far as nasality is concerned, both early attempts at reproducing French nasal vowels (VN and V) were unsuccessful at first, due to Alsatians' low level of oral proficiency in French at the time. Indeed, the outright loss of nasality through denasalization (French V > Alsatian V) succeeded prior to a restructuring to oral vowels followed by nasal consonants (French V > Alsatian VN). As still noted about rural areas in Huber,

> *le dialectophone, n'ayant pas l'habitude de prononcer [les voyelles nasales], leur substitue les sons les plus rapprochés de son système phonétique, en l'occurrence, les orales correspondantes.*
>
> Not being accustomed to nasal vowels, the dialect speaker replaces them with the closest sounds in his [native] phonetic system, namely the corresponding oral vowels. (1970:40)

Presumably both because nasality had to be acquired without the triggering effect of a following nasal consonant as well as because of the 47-year long interruption in the affiliation of Alsace with France during the Prussian Wars from 1871 to 1918 and another 6-year long interruption from 1939 to 1945 during WWII, the acquisition of nasality on the vowel was a long time coming. Indeed, it was not until after WWII, a little over a century after the appearance of the single variant, when French became socially dominant in urban Alsace in

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all but intimate family settings, and the single oral vowel adaptations of French nasal vowels acquired some nasality in the French spoken by Alsatians. As one would expect, acquisition occurred in urban areas before it took place in rural areas. It also occurred in younger Alsatians before older Alsatians (see Laeufer in press for details).

Indeed, in the French spoken in the early 1960s by Alsatians living in rural areas, Philipp (1965:125) notes that at best "la nasalisation est très imparfaite" and, based on transcriptions from auditory recordings, transcribes oral or weakly nasal Alsatian vowels in all environments, represented here as V and V. The vowels are Alsatian vowels as far as quality is concerned, with or without some weak nasalization added. Her illustrative examples of weak nasalization include word-finally *crayon* [ ], *brun* [œ]; before continuants *mince* [ˈn]; and before stops *monte* [ ], *trente* [Ĭ]. Some twenty years later, also on the basis of auditory recordings of the French spoken in the early 1980s by an Alsatian from rural Riquewihr, Carton et al. (1983) still note "parfois, faible nasalité de on, an, in", but with more French-like vowel quality (e.g., under primary stress, *ce sont*... [sə so]).

A decade later, an instrumental phonetic (acoustic) analysis of the French spoken in the capital city of Strasbourg (Urban 1975:142) reveals that French nasal vowels are pronounced accurately by most urban Alsatians in all environments, both as far as quality and nasality are concerned (e.g., [õ] in *conduis, tomber, Oncle Alfred, bon*), with the exception that "chez un certain nombre de vieilles personnes, on entend encore des voyelles entièrement dénasalisées, et l'on reconnait là une ancienne tendance".[3] In particular, such older urban speakers were still using single oral Alsatian vowels under primary or secondary stress (e.g., *quinze, pense, champion, religion*), but had weakly nasal vowels in unstressed or destressed position (no illustrative examples provided).[4] With the 1975 older generation long passed away and language shift to French well underway in the cities, French-like nasal vowels are currently the norm in French as spoken in urban Alsace.

Progressively, as Alsatians have become more proficient in French, the vowel quality and degree of nasality have better and better approximated the French originals. In particular, their acquisition of French nasal vowels has progressed from Alsatian oral vowels, through Alsatian vowels with weak nasality added, to more French-like vowels with stronger nasality and, for many younger, especially educated dialect speakers, to authentic French nasal vowels, both as far as vowel quality and degree of nasality are concerned. These steps can be collapsed into three main stages: Alsatian oral vowels, Alsatian vowels with weak nasality, and French vowels with more complete nasality (V → V → V). Crucially, as Alsatians slowly added nasality to their single oral vowel adaptations of French nasal vowels, they did so without the assimilatory help of a neighboring nasal consonant, which is predicted not to occur in languages.

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[3] 'With a certain number of elderly people one still hears fully denasalized vowels, which represents a former usage'.

[4] Interestingly, the suprasegmental factors found to be favoring "spontaneous" (unconditioned) vowel nasalization in French loanwords as well as in the French spoken in Alsace, namely unstressed position and short vowels, are identical to the factors found to be at play in other cases of unconditioned vowel nasalization reported in the literature. Spontaneous nasalization appears to favor unstressed syllables, in which the velum is more easily lowered because the articulators are more relaxed than in stressed syllables (e.g., in the Franco-Provençal language varieties located between Geneva and Neuchâtel, and further west in part of the Dauphiné, as reported in Sampson 1999:116–17). Not unexpectedly, these factors are the opposite of those found to favor contextual (conditioned) vowel nasalization in languages where, at least in the Romance group, nasalization is more commonly found in stressed, as opposed to unstressed, syllables (Sampson 1999:340), and in long (or previously lengthened) vowels, as opposed to short vowels (Hajek 1997:208).

Interestingly enough, there is also in one sociolect of Aix-en-Provence an alternative second stage along the acquisition continuum of Standard French nasal vowels in non-assimilatory contexts. Instead of the acquisition process starting with oral vowel + nasal consonant sequences developing into partially nasalized vowels + nasal off-glides (VN → VN / V$^{N}$), some Aixois speakers (Group 1) were found instead to continue the oral vowel stage, with a gender-related difference (Taylor 1996). While the men (Group 1a) of this mostly middle-aged and relatively less educated speaker group simply continue the VN/V[ŋ] first stage, the women (Group 1b) were found to continue the oral vowel + nasal consonant stage in assimilatory environments, and to delete the nasal consonant altogether in non-assimilatory environments where it is realized as [ŋ] by Group 1. The resulting single oral vowel variant is found exclusively in the less educated middle-aged female subgroup of urban Aixois in Taylor's corpus. Interestingly, the acquisition continuum of Standard French nasal vowels for that speaker group in non-assimilatory word-final environment very much resembles that of Alsatians and contradicts the predictions of universalists: V[ŋ] → V → V → V.

There do exist some isolated instances of so-called spontaneous vowel nasalization reported in the literature, where nasal vowels have developed from oral vowels without the presence of a nasal consonant. Most often spontaneous nasalization occurs in languages that also have well-established nasal (V), or strongly nasalized vowels (VN) which are analogically extended to contexts where they are either unconditioned or flanked by a certain type of non-nasal consonant. An example would be some Southern German dialects, where from contexts before nasal consonants as in Standard German *Sohn* > Swabian [zõ:n] > [zõ:], nasalization is extended to oral vowels in absolute word-final position as in Standard German *Floh* > Swabian [flõ:] (Ruhlen 1973:9–11). Likewise, the untriggered word-final vowel nasality presumably occurring over time in the female Aixois French sociolect can be analyzed as an analogical extension from (all the) other environments in which the nasal consonant is preserved, thus French *enfin* > Group 1 Aixois [aΩfeŋ] > Goupe 1b Aixois [aΩfe] > [ĨΩfe] > [ĩ$^{\Omega}$fe], and therefore also [ĩ$^{\Omega}$fn]). In the French spoken in Alsace, on the other hand, the change in adaptation patterns was generalized from oral V[ŋ] to oral VN > V and from non-assimilatory (that is, unconditioned) environments to all environments, thus ruling out an analogical extension account of vowel nasality from conditioned to unconditioned environments.

4. CONCLUSION. The present paper tests two predictions about the second language acquisition of French nasal vowels by native speakers of language varieties that have only phonemically oral vowels. Both predictions proved true for the two language varieties looked at

more closely. Indeed, the acquisition of vowel nasality was found to involve the same two paths as borrowing, depending on whether nasal vowel adaptation is initially to native V or to native VN. In the latter case, exemplified here by speakers of Southeastern French, restructuring of Standard French nasal vowels to VN is followed by the acquisition of conditioned vowel nasalization. In the former case, exemplified here by Northeastern French as spoken in Alsace, denasalization to V is followed by the acquisition of unconditioned vowel nasality. While the first of these two acquisition patterns, VN > VN / $V^N$ > $V^N$ > V, is found to correspond to the typical development of conditioned vowel nasalization in languages, the second, V > V > V, is predicted not to occur.

As expected, the acquisition of unconditioned vowel nasality is likely to take longer than that of conditioned vowel nasalization, presumably because unconditioned nasality has to be acquired without the assimilatory effect of a following nasal consonant. This is most obvious in cases like French as spoken by Alsatians, where acquisition is not facilitated by the analogical extension of vowel nasality from conditioned to unconditioned environments. In such cases, vowel nasalization is predicted not to occur at all in languages, and therefore neither is nasal vowel acquisition predicted to occur.

Presumably nasal vowel acquisition nevertheless took place in the French spoken in Alsace because, by the mid-twentieth century, Alsatians were more proficient learners of French than a century earlier and had access to a more accurate and constant model of Standard French to emulate within the contact situation, especially after WWII with the popularization of the aural (radio, TV) French media. Likewise in the female Aixois French sociolect, the development of unconditioned strong vowel nasality is very likely due to the post WWII exposure to Standard French in the media, which provides a constantly available and accurate model of Standard French for dialectal or regional French speakers to emulate.[5] A prediction to be tested in further research is therefore that the acquisition of unconditioned strong vowel nasality (V > V > V) is only possible in a contact situation in the presence of a constant accurate model.

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[5] Rather than expressing a value judgment, the term accurate thus refers here to the Standard French model, as opposed to a non-standard, strongly regionally colored, model.

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# THE MADNESS OF THE HERETICS:
# MADNESS AND THE EARLY CHRISTIAN WORLDVIEW

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**Abstract:** Early Christianity struggled with many enemies along its path to eventual ascendancy within the Roman world. Early Church writers were often called upon to defend their faith against enemies, both external and internal. In their writings they strove to show the inferiority of alternative beliefs and demonstrate the inherent rationality and *cosmic* correctness of (orthodox) Christianity and the "madness" of alternatives. This study examines the occurrences of terms related to madness in a large corpus (~107 MB) of writings by 61 early Christian Fathers to understand how they used the concept of madness in their rhetoric. The results show considerable variation between authors but also show a highly significant ($p < 0.001$) correlation of uses of "madness," with reference to beliefs deemed heretical by the emerging Orthodox consensus. A further examination of the text demonstrates that anti-Trinitarian heresies (in particular Arianism) were those most likely to be considered mad because they represented a challenge to the cosmological concepts of early Christianity. The study thus shows that the concept of "madness" was a motivated one for early Christian writers, not merely a rhetorical label of disapprobation.

**Keywords**: corpus linguistics, madness, Christianity, heresy, Paganism

**Languages**: English, Greek

1. MADNESS AS A CULTURAL CONSTRUCT. Following the work of both Michel Foucault (1988) and Thomas S. Szasz (1984, 1997a, 1997b, *inter alia*), it is now common to analyze the label *mad* as a tool for the control of "deviant" or politically oppositional views, rather than as objectively definable mental disorder. Although there are significant differences between the views of Foucalt and Szasz, both point to the construction of madness as a tool to enforce political and social goals. The Foucauldian strain of thought, in particular, points to the inherent interestedness of accusations of madness; his arguments have been demonstrated in the use of labels like "madness" or "insanity" to control oppositional voices in totalitarian regimes, where enemies of the ruling regimes have found themselves "diagnosed" with "insanity" and forcibly confined or reeducated. Similarly, consider political terms such as "rabid Right" or "loony Left" used by some to refer to their political opponents.

In partial contrast to these views of madness, I instead focus on the motivations in early Christianity that led some (but not all) forms of belief and action that were deemed trou-

<table>
<tr><th>Token Types</th><th>Regular Expression[1]</th><th>Count</th></tr>
<tr><td><i>mad</i>, <i>madness</i>, <i>madman</i>, <i>madmen</i></td><td><code>(?i)\bmad((ness)|m(a|e)n)?</code></td><td>1,647</td></tr>
<tr><td><i>insane</i>, <i>insanity</i></td><td><code>(?i)\binsan</code></td><td>214</td></tr>
<tr><td><i>frenzy</i>, <i>frenzied...</i></td><td><code>(?i)frenz(y|ie)</code></td><td>181</td></tr>
<tr><td><i>rave, raving...</i></td><td><code>(?i)\brav(e|es|ed|ing|ings)</code></td><td>116</td></tr>
<tr><td><i>maniac</i> + derivatives (e.g., <i>Ariomaniac</i>)</td><td><code>(?i)maniac?</code></td><td>44</td></tr>
<tr><td><i>lunatic, lunacy</i></td><td><code>(?i)luna(tic|cy)</code></td><td>27</td></tr>
<tr><td><i>deranged</i></td><td><code>(?i)derange</code></td><td>22</td></tr>
<tr><td><i>crazy, crazed</i></td><td><code>(?i)craz(y|ed)</code></td><td>18</td></tr>
<tr><td><i>demented</i></td><td><code>(?i)dement</code></td><td>8</td></tr>
</table>

***Table 1**. Counts for various tokens of MAD in the New Advent corpus, sorted by frequency.*

blesome to Christians to be termed MAD. This focus does not deny that accusations of madness were used as a way to silence critics or to invoke the assistance of state authorities; rather it focuses on the belief of those who accused others of being mad and tries to demonstrate an underlying logic to early Christianity accusations of madness.

2. BACKGROUND. Early Christianity was not a monolithic religion characterized by systematic, official theology clearly separated from "heresy." As a result, some scholars have taken to referring to early "Christianities" (see Ehrman 2003). Various Christian movements that were later defined as "heresies" (such as Arianism, which will be discussed at length later) even enjoyed official support from the Roman state at various times and pronounced proto-Orthodox thought itself to be heretical. Thus the conflict over heresy was often covertly (and sometimes overtly) political, and a significant amount of surviving early Christian writing consists of proto-Orthodox polemical tracts against heretics, Pagans[2], Jews, and others. (Counterattacks, however, have seldom survived except when proto-Orthodox writers quoted them to dispute them, e.g., Origen's famous *Contra Celsus*, in which Origen of Alexandria delivered a point-for-point refutation against an anti-Christian polemical tract.)

The corpus of authors I examined are all from the late Roman Empire and span from when Christianity was a small, persecuted sect to when the nascent Catholic church emerged as the state religion of the Empire. Given the real and rhetorical violence of the period, much of the writing from this period is deeply concerned with defining both acceptable Christian behavior and setting boundaries against unacceptable behavior and beliefs.

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[1] Although a full discussion of regular expressions is beyond the scope of this paper, the following notes will help readers interpret the expressions in **Table 1**: *`(?i)`* specifies that the expression is case insensitive. A *vertical bar* "`|`" specifies alternation (E.g., "`y|i`" will match the strings *y* or *i*). A *question mark* ("`?`") indicates that the pattern will find zero or one of the previous item. *Parentheses* delimit grouping for other operations (e.g., "`((ness)|m(a|e)n)?`" will find zero or one instances of *ness*, *man* or *men*). The expression "`\b`" matches word boundaries (e.g., "`\brave`" would match *rave* but not *brave* or *crave*).

[2] In this context I use "Pagan" to refer to any religion other than Christianity or Judaism.

3. METHOD. This paper examines a corpus of English translations of early Christian writers available from the New Advent website (Knight 2005). The site contains writings from over sixty early writers (the exact number is uncertain because some texts were anonymously authored, and some contain long excerpts from writers who are not independently represented in the corpus under their own names). My examination focused on texts of positive authorship from 61 authors. After downloading this corpus and preparing it,[3] I was able to identify 2,276 examples of terms for MAD by using regular expressions, as shown in **Table 1**.

I examined each instance of MAD in the corpus to determine to whom or what the term was applied, or how it was used. This examination showed that the list of tokens found are appropriately considered tokens of MAD. (I was concerned that some instances of *mad* might be used in the contemporary sense of angry, but I did not find a single instance of this meaning in the corpus.)

Based on this examination, I then created an *ad hoc* listing of referents. While this listing is not based on any predefined list of meanings or referents for MAD (indeed such a listing would have been impossible to find), and is thus dependent on my (subjective) assessment and reading of the context in which someone or something is referred to as MAD, I am confident that another researcher would arrive at similar (although certainly not identical) counts and referents given the same data: in most cases it was quite clear who or what was referred to as MAD since the writers were not trying to hide their attitudes and feelings towards those they accused of being MAD.

In looking at uses of MAD by individual writers, two factors must be considered: (1) some writers use mad more than others (thirty of the sixty-one writers use it less than five times, while one—John Chrysostom—uses MAD over six hundred times alone); and (2) some writers are much more "dense" in their use of mad than others. Consider that a writer who produces one million words and uses MAD ten times is using it much less frequently than another writer who produces only 50,000 words but uses MAD five times in them. To provide a basis for comparative evaluation of which authors are interested in madness, I devised a density metric[4] for uses of MAD. **Figure 1** shows both the number of occurrences

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[3] Preparation of the corpus involved downloading all of the HTML files on the New Advent website, stripping out presentational formatting (including site-wide navigation bars, graphics, and footers), sorting the texts by author, and removing files that were not in fact by given authors (e.g., letters written *to* a specific author). With the kind assistance of Andrzej Zydroń, I broke the original texts into sentences. Paragraph markers (the pilcrow sign, ¶) were added to mark original paragraph boundaries. (Because of the preparation work carried out on these files, line numbers cited in this analysis refer to my copies of the files only.) Any parties interested in obtaining my prepared corpus may contact me at *arle.lommel@gmail.com*.

[4] "Density" is calculated by taking the number of tokens of a given term a particular author's writing, dividing it by the total size of the files by that author in bytes, and multiplying the result by 1,000,000. For example, Augustine's writings take up 20,451,200 bytes of space (approximately 19 megabytes); when divided by 466 occurrences of mad and multiplied by 1,000,000, the resulting

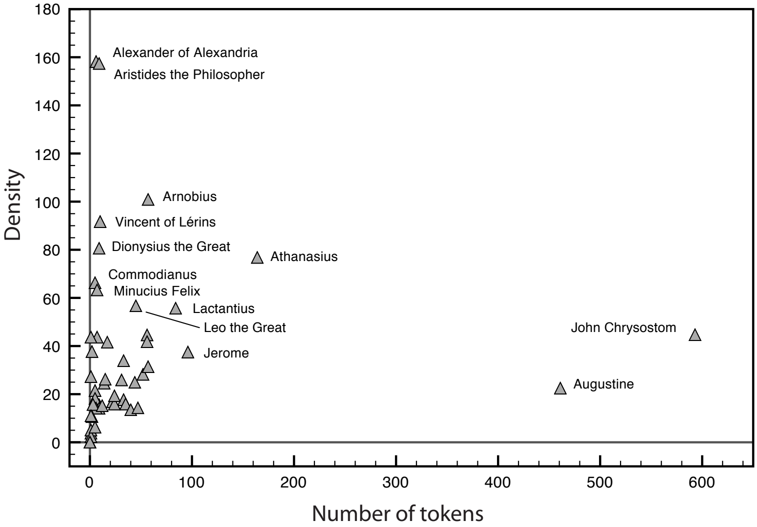

***Figure 1.*** *Number and density of tokens of MAD by individual author. Only outlying authors (in terms of either number of tokens or density are labeled).*

of MAD and the density for each writer (due to space constraints I cannot present all figures here). As can be seen a handful of authors account for a large percentage of usage of mad, and a small number use it more densely than other authors.

2. WHAT DOES MADNESS MEAN FOR EARLY CHRISTIAN WRITERS? Based on my examination of all occurrences of MAD[5] in the New Advent corpus, I identified a number of specific types of referents, the figure or item to which MAD refers. Admittedly not all referents in my finding are parallel, but given the heterogeneous nature of the writers and their usage, it is unlikely that this problem could be avoided. Many of these referents occurred only a few times in the sample I examined (e.g., cannibalism, unchastity in women, criminal activity, belief in the action of fate, and sentiment against the cult of Mary). In contrast to this background "noise" of actions and people who were characterized as MAD, a relatively small number of referents occurred repeatedly, as presented in **Table 2**, which presents all

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density figure is 22.8. These density figures do not equate to a particular measure of how often the word is used per a given number of words or any other "real" metric, but do allow easy comparison of how frequently each author uses a given term compared to other authors (e.g., an author with a density of 10.0 uses a term twice as frequently as one with a density of 5.0).

[5] This portion of the study was carried out with an earlier version of the corpus than the one described above (which I downloaded in 2009). This smaller version contained 1,622 instance of MAD. As reading each instance and assigning it to a category is time consuming, I decided not to address the additional 654 tokens found with the updated corpus in my examination. Given the 71.2% sampling rate obtained from the earlier corpus versus the updated version, I doubt that adding them in would substantially alter the results of the examination.

| Referent | All | | Exc. John Chrysostom | | John Chrysostom | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| Heresies and schism | 334 | 20.6% | 330 | 29.1% | 4 | 0.8% |
| Literal madness | 229 | 14.1% | 127 | 11.2% | 102 | 20.9% |
| General term of disapprobation / unclear reference | 148 | 9.1% | 100 | 8.8% | 48 | 9.8% |
| Pagan gods and daimons, religion, and beliefs (including astrology) | 139 | 8.6% | 115 | 10.2% | 24 | 4.9% |
| Sexual desire, covetousness, and "improper" desire | 119 | 7.3% | 37 | 3.3% | 82 | 16.8% |
| Irrational, defying "common sense" | 88 | 5.4% | 49 | 4.3% | 39 | 8.0% |
| Disbelief or false belief (excluding heresy) | 59 | 3.6% | 38 | 3.4% | 21 | 4.3% |
| Excess of emotion | 57 | 3.5% | 40 | 3.5% | 17 | 3.5% |
| Related to Judaism | 48 | 3.0% | 20 | 1.8% | 28 | 5.7% |
| Stage, circus, dancing, gladiatorial combat, or other public spectacles | 43 | 2.7% | 39 | 3.4% | 4 | 0.8% |
| Cruel actions or leaders | 36 | 2.2% | 18 | 1.6% | 18 | 3.7% |
| Opposition to Christ/Christianity | 33 | 2.0% | 24 | 2.1% | 9 | 1.8% |
| Blasphemy, sacrilege, impiety | 31 | 1.9% | 16 | 1.4% | 15 | 3.1% |
| Persecution of Christians | 26 | 1.6% | 20 | 1.8% | 6 | 1.2% |
| Relating to devils or possessed individuals | 25 | 1.5% | 6 | 0.5% | 19 | 3.9% |
| Reckless/imprudent behavior | 20 | 1.2% | 15 | 1.3% | 5 | 1.0% |
| Opinion of non-believers concerning Christians | 19 | 1.2% | 17 | 1.5% | 2 | 0.4% |
| General unrighteousness or sin | 18 | 1.1% | 7 | 0.6% | 11 | 2.2% |

***Table 1.*** *Referents of* MAD *in the New Advent corpus with more than one percent of the total for* MAD*. (A full listing of categories and their counts are presented in Appendix B.)*

of those referents which were referred to at least 1% of the time (for reasons that will be explained shortly, figures without John Chrysostom and for him are presented separately).

A few of these categories require some explanation (section numbers refer to the listing that follows below):

- **Literal madness (§2.2).** Since these uses refer to actions of what most psychologists and physicians today would consider brain diseases (e.g., schizophrenia) or other medical disorders (e.g., rabies), they do not refer to a coherent category of actions or beliefs considered to be MAD. Indeed, many of the references to literal madness are references to outward signs of behavior such as foaming at the mouth, striving to harm oneself or others, babbling or speaking incoherently, or otherwise behaving strangely. While useful for understanding the outward manifestations of what would now be considered mental disease, they do not provide any insight into what beliefs or ideas would have been considered MAD among early Christians.

- **General term of disapprobation/unclear reference (§2.3).** In many instances it was not clear what exactly was considered MAD by an author, and they used MAD as a rhetorical label for whatever ideas they disagreed with, much as a modern author might call an idea "stupid" or "loony," rather than engage in a detailed criticism or criticism of it.
- **Irrational, defying common sense (§2.6).** These uses consist of accusations of logical *non sequitur* or irrationality. For instance, a position that an author has set up as a strawman to show how certain conclusions are logically untenable is called *mad*. The term may be used rhetorically in formulations like "only a madman would believe X" or "if you hold Y [a logical outcome of your premises], you must be mad." Like references to literal madness, this category is not particularly interesting in the context of this study because it does not generally isolate specific things that are considered MAD. (Of course, this statement begs the question of what is considered logical in the first place, but a detailed analysis of what sort of logic is labelled MAD is beyond the scope of this study.)

To better illustrate the categories I derived, I present a few examples of each one. Examples are cited by the author's name, the title of the work and the file number (from the New Advent website) and line number(s) as found in my prepared version of the corpus. These examples are not intended to fully explore the nuances of each category, but instead to provide a sample of the sorts of texts found in each one.

### 2.1. HERESIES AND SCHISM.

(1) For you know, brethren, that Eusebius and his fellows have always been the supporters and associates of the impious heresy of the Arian **madmen**.... (Athanasius, *Circular Letter*, 2807:22)

(2) But I have resolved, like an earnest man, to meet my adversary every way and everywhere in the **madness** of his heresy... (Tertullian, *Against Marcion*, Book III, 03123:9)

### 2.2. LITERAL MADNESS.

(3) If thou restore money to a **raving lunatic** when he cannot keep it; if thou give up to a **madman** a sword once put by with thee, whereby he may kill himself, is it not an act contrary to duty to pay the debt? (Ambrose, *On the Duties of the Clergy,* Book I, 34011:1573)

(4) For both the physician is irksome to the **raging madman**, and a father to his undisciplined son... (Augustine, *Letter 185*, 1102185:39)

### 2.3. GENERAL TERM OF DISAPPROBATION / UNCLEAR REFERENCE.

(5) …as to what you are writing about **mad** dogs bringing feigned charges against him, you will yourself feign the same… (Rufinus, *Apology* (Book II), 27092:231)

(6) But… some persons… even during this very rebuke… laugh…. For indeed such is their **derangement**, such their **madness**, that it does not feel the rebuke. (John Chrysostom, *Homily 15 on Hebrews*, 240215:172–73)

### 2.4. PAGAN GODS AND *DAIMONS*,[6] RELIGION, AND BELIEFS (INCLUDING ASTROLOGY).

(7) But to desire to predict the characters, the acts, and the fate of those who are born from such an [astrological] observation, is a great delusion and great **madness**. (Augustine, *On Christian Doctrine*, Book II, 12022:229)

(8) Such was the spirit of **madness** with which these princes sacrificed to their demon deities men consecrated to the service of the King of kings. (Eusebius of Caesarea, *Oration in Praise of Constantine*, 2504:184)

### 2.5. SEXUAL DESIRE, COVETOUSNESS, AND "IMPROPER" DESIRE (FOR ANYTHING)

(9) "They were as fed horses: they were **mad** after women": they no sooner see a woman than they neigh after her… (Jerome, *Against Jovinianus*, Book II, 30092:914)

(10) For such a little child is free from pride and the **mad** desire of glory, and envy, and contentiousness… (John Chrysostom, *Homily 58 on the Gospel of Matthew*, 200158:75)

### 2.6. IRRATIONAL, DEFYING "COMMON SENSE."

(11) Nor would I indeed make the priesthood responsible for these evils: far be such **madness** from me… (John Chrysostom, *On the Priesthood*, Book III, 19223:108)

(12) …would not such a man be justly declared **mad**, and destitute of reason, by all possessed of common sense? (Irenaeus of Lyons, *Against Heresies*, Book II, Chapter 26), 0103226:8)

### 2.7. DISBELIEF OR FALSE BELIEF (EXCLUDING HERESY).

(13) Few are found of such great impiety, that that should be fulfilled in them which is written, "The fool hath said in his heart, There is no God." This is but the **madness** of a few. (Augustine, *Sermon 19 on the New Testament*, 160319:28–29)

(14) Wherefore I exhort you to get you free from this **madness** [lack of proper faith]… (John Chrysostom, *Homily 25 on Romans*, 210225:304)

### 2.8. EXCESS OF EMOTION.

(15) …it be sufficient in the way of punishment that they be tortured by the remaining in them of these hurtful affections, i.e., of the anger, or of the fury, or of the **madness**, or of the sorrow… (Origen, *De Principiis*, Book II, 04122:553)

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[6] *Daimons* (*δαιμονες*), whence *demons*, were superhuman spiritual beings in Greek mythology.

(16) Saul, almost **mad** with rage, because he was unable to capture his son-in-law… (Sulpitius Severus, *Sacred History*, Book I, 35051:541)

### 2.9. RELATED TO JUDAISM.

(17) For ye [Jews] resolved on a **mad** and bloody counsel, ye "fat bulls," ye "many oxen," ye "roaring" wild beasts, ye rabid "dogs," to give up to death the Author of life and the LORD of glory…. (Leo the Great, *Sermon 54*, 360354:35)

(18) For how should [Jews] be capable of forming a sound judgment, who, since their parricidal guilt in slaying their Lord, have been subject to the direction, not of reason, but of ungoverned passion, and are swayed by every impulse of the **mad** spirit that is in them? (Eusebius of Caesarea, *Life of Constantine*, Book III, 25023:98)

### 2.10. STAGE, CIRCUS, DANCING, GLADIATORIAL COMBAT, PUBLIC SPECTACLES.

(19) And so one must be on one's guard, lest… one should suppose that the movements of wanton dances and the **madness** of the stage were commended… (Ambrose, *Concerning Repentance*, Book II, 34062:191)

(20) …the spectators themselves striving more **madly** with each other, as they espouse the cause of different combatants, than is the case even with those very men whose madness they **madly** provoke, while at the same time they also long to be spectators of the same in their **mad frenzy**. (Augustine, *On the Catechising of the Uninstructed*, 1303:267)

### 2.11. CRUEL ACTIONS OR LEADERS.

(21) But not even [with torture] was [the heathen's] **madness** and cruelty toward the saints satisfied. (Eusebius of Caesarea, *Church History* (Book V), 250105:119)

(22) This also was prophetic; for he knew that after Herod would come the **madness** of Pilate, and so that when he had gone before Christ would follow him. (Gregory Nazianzen, *Oration 39*, 310239:103)

### 2.12. OPPOSITION TO CHRIST/CHRISTIANITY.

(23) The Emperor of unhappy memory was raging against us, whose **madness** in rejecting Christ, after making himself its first victim, had now rendered him intolerable to others… (Gregory Nazianzen, *Oration 7*, 310207:63)

(24) Therefore in the trumpets and phials is signified either the desolation of the plagues that are sent upon the earth, or the **madness** of Antichrist himself…. (Victorinus, *Commentary on the Apocalypse*, 0712:342)

### 2.13. BLASPHEMY, SACRILEGE, IMPIETY.

(25) Would that these men were even now ashamed of their conduct, and confined their rashness to man, nor proceeded to such extreme **madness** as even to charge our Saviour with cowardice! For it is against Him that they now utter their blasphemies. (Athanasius, *Apologia de Fuga*, 2814:93–94)

(26) [Baalam] had the dumb beast of burden for a rebuke of his **madness**, which speaking with a man's voice forbade the foolishness of the prophet… (Gregory the Great, *Pastoral Rule*, Book III, 36013:326)

### 2.14. PERSECUTION OF CHRISTIANS.

(27) For to such a length did [the enemies of Christ] dare to carry their **madness** by means of the soldiers, that they not only banished the Clergy of the city, but also went out to the Hermits, and laid their fatal hands upon Solitaries. (Athansius, *Letter 51*, 286051:3)

(28) It is unnecessary to speak of the cruelty of that persecution which was raised against the Christians and under Decius, who was **mad** against the religion of Philip, whom he had slain… (Jerome, *De Viris Illustribus*, 2708:251)

### 2.15. RELATING TO DEVILS OR POSSESSED INDIVIDUALS.

(29) Nor must we omit to tell that Orion, a leading man and wealthy citizen of Aira, on the coast of the Red Sea, being possessed by a legion of demons was brought to him. Hands, neck, sides, feet were laden with iron, and his glaring eyes portended an access of raging **madness**. (Jerome, *The Life of St. Hilarion*, 3003:122–23)

### 2.16. RECKLESS/IMPRUDENT BEHAVIOR.

(30) …how could I be so possessed with **madness** as to slander an Emperor before an Emperor, and to set a brother at variance with a brother? (Athanasius, *Apologia ad Constantium*, 2813:44)

(31) What slave ever reached such a pitch of **mad** audacity as to fling himself upon his master's bed? (Basil the Great, *Letter 46*, 3202046:55)

### 2.17. OPINION OF NON-BELIEVERS CONCERNING CHRISTIANS.

(32) If the whole Church be assembled together, and all speak with tongues, and there come in one unlearned or unbelieving, will he not say that you are **mad**? (Ambrose, *On the Holy Spirit*, Book III, 34023:670)

(33) When he had thus spoken, all, as with one consent, with rude voice raised a shout of derision, to put him to shame, and to silence [Barnabas], crying out that he was a barbarian and a **madman**. (Clement of Rome, *Recognitions*, Book II, 080401:52)

### 2.18. GENERAL UNRIGHTEOUSNESS OR SIN.

(34) For to those that are desperate, and are continually in wickedness, and are in a state of senselessness, and are **mad**… (John Chrysostom, *Homily 59 on the Gospel of Matthew*, 200159:124)

(35) …let us return to our senses, let us recover those who are thus **mad** [i.e., with sin], let us take away these councils out of the city, let us make our tongue gracious, let us rid it of all evil speaking… (John Chrysostom, *Homily 31 on the Acts of the Apostles*, 210131:198)

By and large MAD refers to ideas seen as threatening to Christianity and people who hold those views (e.g., heretics, Pagans, and Jews) and is not particularly used to refer to moral turpitude or sin in general (except by John Chrysostom). MAD, in this corpus, tends to refer to incorrect beliefs. While there is almost certainly a moral judgement implied by uses of MAD in the corpus, the primary meaning is in the realm of ideas rather than morality.

The only reason *Sexual desire, covetousness, and "improper" desire* (§2.5) ranks as highly as it does is because this is a sense in which John Chrysostom is particularly liable to use MAD: because almost one quarter of the entire corpus consists of his uses, they are particularly liable to influence overall percentages. Chrysostom uses MAD in a very different sense from most of the authors represented in the corpus: he uses the figure of the madman as a rhetorical device against which to compare his enemies or those caught in the thrall of sin, and he uses it to refer to sinful desire for money, sex, or fame (he accounts for 69% of the usages in this meaning); in contrast, he almost never uses MAD to refer to heresy. Thus, in Chrysostom's writings, MAD has a distinctively moral quality that it does not have for other writers and is not primarily concerned with ideas but rather with actions. His usage is also less specific in the types of referents it takes in compared to someone like Athanasius, who is focused largely on heresy. (Due to difficulty in presenting the data, breakdowns of meaning for individual authors are not included in this report, except for John Chrysostom. Individual authors, however, do tend to have their particular meanings for MAD, generally within the overall patterns presented above.)

3. HERESY. When *heresy*, the most common referent for MAD, is broken down into specific types, certain types of heresy are particularly likely to be cited as MAD, as listed in **Table 2**. What is apparent from **Table 2** is that not all heresies are considered equally MAD. Arianism is by far the most frequent sort of heresy cited as MAD, perhaps because of the number of anti-Arian tractates in the New Advent sample, and also because of the rhetorical use of Arius as the quintessential arch-heretic/heresiarch by many of the writers.

Although the importance of Arianism in the minds of orthodox Christian writers is a factor, I will argue that the selection of Arianism and other non-Trinitarian heresies as the prominent referents for mad seems to go beyond simple rhetorical value: Arianism's particular cosmological claims make it an important target for denigration by early writers. Similarly, although Manichean[7] thought represented an obvious and pressing political threat to early Christians, I argue that it is Manicheanism's particular cosmological claims that lead it to be considered MAD in particular. (Donatists occur high on the list largely because they were of particular interest to Augustine, and his uses of MAD to refer to Donatists largely have to do with the violence of the related Circumcellions[8]: unlike descriptions of Arians as MAD, Augustine's use has primarily to do with their actions, not their ideas.)

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[7] Strictly speaking, Manicheanism is not a Christian heresy, but rather a distinct, albeit related, religion that had considerable support within the Roman empire at various times. Nevertheless, early Church fathers tended to treat it as a heresy.

[8] The Circumcellions were a violent group loosely affiliated with the Donatists who valued martyrdom. They were known for attempting to provoke others into killing them (thereby making them martyrs). One might see them as the methodological forefathers of suicide bombers.

| Type of Heresy | Occurrences | % of MAD references to heresy |
|---|---|---|
| Unspecified, generic heresy | 45 | 13.8% |
| Arian | 125 | 38.2% |
| Donatist/Circumcellian | 50 | 15.3% |
| Unspecified incorrect Trinitarian | 31 | 9.5% |
| Manichean | 29 | 8.9% |
| Eutychian | 11 | 3.4% |
| Valentinian/Basilidean/Gnostic | 11 | 3.4% |
| Montanist | 7 | 2.1% |
| Marcionite | 5 | 1.5% |
| Pelagian | 4 | 1.2% |
| Sabellian | 3 | 0.9% |
| Apollinarian | 2 | 0.6% |
| Carpocratic | 1 | 0.3% |
| Docetist | 1 | 0.3% |
| Nestorian | 1 | 0.3% |
| Vigilantian | 1 | 0.3% |

***Table 2.*** *Breakdown of specific instances of heresies found in the New Advent corpus.*

Before turning to an analysis of the particular ways in which claims of MAD were used by the writers in the New Advent corpus, I will briefly present the results of an analysis of the context in which MAD occurs with respect to occurrences of HERESY (here referring to instances of *heresy*, *heretic*, *heretical*, or the names of particular heretics or heresies).[9] The basis for this analysis is simple, yet it provides a way of independently confirming the previous findings about heresy and madness.

In this analysis I looked to see how often MAD occurs in paragraphs in which HERESY also occurs, and how often it occurs in paragraphs adjacent to those in which HERESY occurs. While these results do not show that any given instance of MAD refers to HERESY, they can show if MAD is particularly likely to show up in stances in which HERESY is discussed. There are 14,864 tokens of HERESY in 8,1006 of the 96,253 paragraphs of the corpus (versus 1,524 tokens for MAD). The results of this analysis confirm that tokens of MAD are particularly likely to show up in discussion of HERESY. The particular context types and their totals are shown in **Table 3** (overleaf).

If the distribution of HERESY were random with respect to MAD, there would be a probability of roughly 8.4% of any given paragraph containing HERESY. Based on this result, a random distribution would predict that MAD and HERESY would occur in the same paragraph about 128 times. In contrast to the random prediction, both occur in the same paragraph 356 times (or 2.8 times the predicted amount). The random correlation would

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[9] Instances of HERESY were found using the regular expression "`(?i)here(sy|ies|tic)`" plus searches for the names of specific heresies listed in **Table 4** (below).

| Context | Number | Percentage of paragraphs with MAD | |
|---|---|---|---|
| Same paragraph + both neighbors | 44 | 2.9% | 22.57% |
| Same paragraph + one neighbor | 124 | 8.14% | |
| Same paragraph (alone) | 188 | 12.34% | |
| Both neighbors | 9 | 0.60% | |
| One neighbor | 119 | 7.81% | |
| None | 1040 | 77.43% | |

***Table 3.** Cooccurrence of MAD and HERESY in same and adjacent paragraph contexts.*

also predict that heresy should be found in paragraphs adjacent to mad about 256 times in the corpus—it is, in fact, found 340 times in adjacent paragraphs. Based on these numbers, the correlation of the two concepts is significant at $p<0.001$.

Most strikingly, there are 44 instances in which HERESY occurs on both sides of and in the same paragraph as MAD, a number that a random distribution would predict to be much lower (to occur only once or twice) in the entire corpus. Note as well that the 20.6% of instances in which MAD refers to HERESY is roughly equal to the 22.6% of occurrences of paragraphs in which MAD and HERESY occur in the same paragraph, suggesting that these results are somewhat equivalent. These results strengthen the idea that MAD as a concept is particularly likely to occur in situations where HERESY is under discussion.

4. WHY HERESY AND PAGANISM? THE COSMOLOGICAL THREAT. Why would HERESY factor so importantly in an early Christian concept of madness? Following Foucalt and Szasz, the obvious answer is to see all of these ideas as constituting a class of the Other which is seen as incoherent and insane, against which Christianity can be defined as a logical and rational alternative. Certainly the need to view the Other as incoherent and to thereby validate Christianity plays a major role. However, not all heresies or potential Others are viewed as equally MAD in the New Advent corpus.

I argue that for early Christian writers, these groups form a coherent conceptual category. The roots for this conceptual unity must be understood in terms of their deviation from an orthodox Christian cosmology and worldview. Christianity, like most religions, provides a set of cosmological principles that are deemed to be self-compatible and coherent. These principles define a worldview that is also seen to be coherent and, critically, self-evidently logical. In this analysis, I draw on Max Weber's *The Protestant Ethic*, in which Weber (2003) sees worldview as constructed through a set of often proverbial basic propositions (such as "time equals money") to create an understanding of the world that is (or seems to be) internally consistent. Weber also cites numerous examples in which those who violate certain principles of Protestant capitalism are viewed in a morally negative light and have their rationality called into question. Using Weber's framework, it is possible to argue that MAD, as determined from within a worldview, is found among those who violate basic cosmological ideas: they are the people who simply do not "get" the world, and who are therefore condemned to irrationality and madness (a point Weber makes both explicitly and implicitly a number of times in his work). This "negative" approach to defining worldview says that it can be defined by looking at those behaviors that are beyond the pale of sanity.

For early orthodox writers, the correctness of assumptions about the nature of God and the Logos/Christ were particularly important because they defined a central aspect of the faith upon which one could rely. A "proper" understanding of the Trinity was key to obtaining salvation and understanding the universe. Because of the central role of the relationship between God the Father and God the Son in the creation of the universe and mankind's role in it, failure to understand this relationship would be failure to understand the *structure* of the universe at a basic level. It would, in other words, be madness, just as it would be madness to look at the noon day sun and say it did not exist because the Trinity is a natural *fact* within orthodox Christianity.

As Dale Martin points out, both Christian and Pagan/philosophical cosmologies supposed certain moral structures existed in the universe that mapped to the ontological structure of the universe and that the conceptions of these two groups differed in fundamental ways (1994, see pp. 160–86 in particular). Questions of belief were thus not neutral intellectual questions, but were instead seen as vital to a proper understanding of how the universe worked. If the nature of God (or the gods) or the cosmos were called into question, these moral structures could no longer be presumed, and people would not have a firm basis for action and belief.

If a distinction is made between "cosmological" heresies and beliefs, mad can be seen as a motivated label, particularly in the case of Paganism and certain heresies: Paganism, non-Trinitarian heresy, and Manicheanism advocate structures of the universe fundamentally at odds with those maintained by orthodox Christianity. If Paganism or Arianism were correct in their assessment of the structure of the universe, orthodox Christianity's understanding of the very structure of the universe would be *ipso facto* wrong; since orthodox writers understood, as an article of faith, that orthodox Christianity had the "right" structure of the universe (and was thus the grounds for all *rational* action), Pagans and heretics with different ideas regarding the Trinity were, by definition, irrational, for they denied the very basis for rational thought and action.

**Table 4** compares the percentage of various named forms of HERESY in both the total count of such terms and in their use as referents for MAD. It shows that the relative ranking of terms is quite different in the two lists. While Arianism tops both lists by a substantial margin, Eutychianism (which accounts for on 0.4% of all instances of HERESY in the corpus) accounts for 4.4% of instances of instances in which HERESY is equated with MAD. If we exclude Donatism (which is considered MAD because of the violence of the Circumcellions rather than for doctrinal reasons), we find that Manicheanism and heresies concerning the Trinity (including Eutychianism) account for a large majority of the discourse on heretical madness (~82%).

It is noteworthy that Pelagianism, while a major concern for early Church writers, is seldom termed MAD. My hypothesis is that Pelagianism, while considered a dangerous heresy by orthodox writers, did not pose the same cosmological threat that Arianism did: Pelagianism accepts the basic notion orthodox of the ungenerate begotten Son that is not a

| Heresy term | % of Total | % of HERESY as referent of MAD |
|---|---:|---:|
| Arian/Arius | 44.8% | 49.8% |
| Manichean | 11.5% | 11.6% |
| Marcionite | 8.7% | 2.0% |
| Pelagian | 7.8% | 1.6% |
| Gnostic | 7.2% | 4.4% |
| Donatist | 4.8% | 19.9% |
| Sabellian | 3.1% | 1.2% |
| Apollinarian | 2.3% | 0.8% |
| Nestorian | 1.7% | 0.4% |
| Eutychian | 0.4% | 4.4% |

***Table 4.** Occurrences of specific named instances of HERESY versus references to each type as MAD, excluding unspecified heresies.*

creature, but is instead coeternal with the Father. Whatever issues orthodoxy may have had with Pelagianism, they were not ones that threatened to undermine orthodoxy's certainty of the structure of the universe in the same way that anti-Trinitarian heresies, Manicheanism, or Paganism did. Pelagians were wrong, but not mad; Arians, by contrast, were *both* wrong *and* mad.

Arguing against the hypothesis that heresies that threatened to undermine the cosmic structures posited by Christianity are MAD, however, is the fact that Marcionite and Gnostic[10] thought are seldom termed MAD in comparison to their total occurrences, even they also pose perhaps a stronger cosmological challenge to the orthodox Christian worldview than do Arianism or other non-Trinitarian heresies. I am uncertain why they do not figure more prominently, although it may simply be that by the time of most of the writers these beliefs were no longer considered an immanent threat to the Christian community.

In a similar manner, Jews and those with "wrong beliefs" (outside of heresies) could be considered MAD if they refused to accept the "fact" of Christian doctrine. Jews, in particular, were suspect as those who had (rhetorically at least) witnessed Jesus' ministry and still did not believe. Jews are not mentioned as frequently as heretics and Pagans, most likely because they did not represent the same immediate threat to Christians in the Roman world, but they nonetheless were considered MAD by many writers (particularly those who had lived nearer to the time of Jesus).

3. CONCLUSIONS AND FUTURE DIRECTIONS. This preliminary look at madness suffers from some limitations. It was conducted in English, largely because of the suitability of the New Advent corpus for this sort of research. It is also limited to those texts represented in the New Advent, and does not include other texts of potential interest. Finally, as a meth-

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[10] Terms related to Gnosticism, Valentinianism, and the teachings of Basilides are grouped together here because early writers tended to conflate them.

odological limitation, the problem of my subjective assessment of the referents of MAD cannot be ignored. While I believe I got the analysis right (and the context analysis of HERESY suggests that I am correct, at least for the issue of HERESY), the fact remains that many instances of MAD were ambiguous or could refer to multiple things: I chose to reduce them all to single referents for the sake of analytical clarity.

In response to the first issue of language, further study on the topic of madness in early Christian thought would require recourse to Greek, Latin, and Coptic texts at the least. Finding a suitable corpus and preparing it is not an insubstantial challenge. My brief foray into the sources of the texts considered in this study does suggest that, at least in the case of the Greek, most instances of MAD correspond to *μανία* (*manía*), but I have not yet verified this correspondence for significant numbers of occurrences. The meanings of *μανία* (frenzied, deranged, or irrational thought, or excessive passion for something) certainly do seem to match the meanings of *mad* I found in the New Advent corpus and suggest that an examination of English translations is not a bad way to begin a preliminary exploration of madness in early Christian thought.

As a result of these limitations, however, I can at present only put forth results that are suggestive of an early Christian concept of madness and make hypotheses about why HERESY in particular would be considered MAD. These hypotheses could be confirmed (or at least strengthened) by more in-depth examination of MAD as developed by writers in antiquity who explicitly address the topic (something none of the writers do in the New Advent corpus) and by considering source-language texts.

At present my research offers tantalizing ideas and some evidence for them. With further study, a comprehensive picture of the concept of madness in early Christian thought might be fleshed out. My prediction is that HERESY will continue to figure prominently in an understanding of madness, not just because accusations of madness have a rhetorical value (they do, and early Church writers make the most of that value), but also because, for these writers, MAD was a coherent conceptual category. An understanding of what they considered mad can help modern readers to better identify the core issues at stake for them. To dismiss MAD as a mere rhetorical strategem is to ignore the very real belief that motivated early orthodox writers, and would be "madness and folly."

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# LINGUISTIC BORROWING WITH MISUNDERSTANDING

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**Abstract:** Motifs from folk tales may be borrowed from one culture to another, usually with modification and often with misunderstanding. The *Domingo Siete* story told among the Triqui in Mexico shows characteristics of two borrowings with attendant misunderstandings.

**Keywords:** Seven day week, Uncle Remus, borrowing, folk tales.

**Languages:** Spanish, Trique.

THE SEVEN DAY WEEK[1] AS CONCEIVED BY THE ANCIENT HEBREWS (Genesis 1:1–2:3) allows for six days that describe schematically God's work of creation and posits a seventh day, which was to be the Jewish Sabbath, a sign between Israel and the rest of the world.

The seven day week was taken over by Christians who celebrated the first day, Sunday, as the commemoration of the resurrection of Jesus Christ. There was some discomfort with the adaptations made at this point. Centuries later Jonathan Edwards (1834) published a series of three sermons called "The Perpetuity and Change of the Sabbath". Meanwhile, medieval Catholic calendars sometimes printed Sunday in the seventh column. Thus in Spain, and probably still in Latin America,[2] one can find calendars where Monday is the first day of the week and Sunday, Spanish *Domingo*, is the seventh. It was in this form, with Domingo in the last column, that the Christian calendar was introduced into Mesoamerica, where it replaced the elaborate native calendars with a short 20 day month and a longer 30 day month which coincided only once in fifty years.

1. THE TRIQUI ADAPTATION OF THE SEVEN-DAY CALENDAR. The Triquis adopted the seven-day ecclesiastical calendar by creating compounds that consisted of the word *gwi* 'sun/day' plus ordinal forms of the numerals 'one' to 'six', as follows (tone is not marked here or in the following examples):

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[1] William Sullivan kindly presented this paper for me at LACUS Forum 34. He added in his presentation some speculation regarding the origin of the seven-day week as days dedicated to the sun, the moon, and the five visible planets; cf. Sullivan 1999.

[2] Sullivan included in his presentation the anecdote that Poland uses a Sunday-seven calendar.

(1) *gwi* + *?ngo* > *gwe?ngo* “first day” Monday
*gwi* + *wwihi* > *guwihi*, “second day” Tuesday
*gwi* + *wa?n^h^* > *gwe?n^h^* “third day” Wednesday.
*gwi* + *gan?anh* > *gwigan?anh* “fourth day” Thursday
*gwi* + *?un?un* > *giun?un* “fifth day” Friday
*gwi* + *watan?an* > *gwetan?an* “sixth day” Saturday

Finally, the Spanish term for Sunday, *Domingo*, was likewise compounded with *gwi* ‘day’ and shortened to give the term *gudungu* in Triqui.

2. THE DOMINGO SIETE STORY. An unusually nice piece of Mexican folklore is called *Domingo Siete*. For a full version of the story, see Cordova (n.d.).[3] I will recount here a drastically shortened version that I myself heard while down in Mexico:

> Once upon a time there were two brothers, one was very clever and the other was rather stupid. The clever little brother, while foraging for firewood came on a group of Dwarves who were happily singing a little song: “*Lunes, Martes, Miercoles, tres*” (‘Monday, Tuesday, Wednesday, three’). The clever little brother suggested that they round out the song by putting on a second stanza: “*Jueves, Viernes, Sabado, seis*” (‘Thursday, Friday, Saturday, Six’). The Dwarves were grateful for his rounding out the song for them and began to sing it going to work everyday):

(2) *Lunes, Martes, Miercoles, tres; Jueves, Viernes, Sabado, seis.*
‘Monday, Tuesday, Wednesday, three; Thursday. Friday, Saturday, six’

> The Dwarves lade him down with gifts of gold, silver and precious stones.
>
> The older brother was very jealous of the clever brother’s discovery. He decided to go out and try to find some wealth for himself. He finally found where the Dwarves were and heard them happily singing their song. Then he stood on a hill and bellowed out in a loud voice, “*Y Domingo Siete*” (‘And Sunday, seven’). The Dwarves were consternated at the unwelcome addition to their song and the ruination of it in their eyes, so they beat up the older brother and sent him home.

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[3] The Internet version takes as its dramatis personae two hunchbacks who lived together. Robert Orr commented on presentation of this paper that a similar version of this story, with two hunchbacks, is found in Scotland. At all events I disclaim any competence as a comparative folklorist. In this paper I simply present a discourse motif found in a story recorded in Mexico along with the borrowing of this motif with misunderstanding in Triqui.

From this has come a saying in Mexico, "Salió con Domingo siete", which means someone came out with something inappropriate and stupid. We will see how the main motif of this story fares on adaptation into Triqui. But first we have to recognize a further input into Triqui from West Africa.

3. THE UNCLE REMUS STORIES. The slave population on the Atlantic coast brought over from West Africa the stories we now know in their southern plantation version as the Uncle Remus stories. These stories were originally about the Fox and some small animal, but were adapted in Mesoamerica to a series of stories about the Coyote and the Rabbit and a few other animals. The rabbit symbolizes the oppressed who live by their wits—with whom the Triquis readily identified. These stories proved to be very popular and were adopted and reworked by storytellers in various languages including Triqui. It seems probable that the Triquis heard the "Domingo Siete" story and took the recitation of the names of the days of the week as basic in itself. At any rate, this motif shows up in a story concerning how the Coyote and the Rabbit went to a fiesta.

4. THE TRIQUI ADAPTATION OF THE DOMINGO SIETE MOTIF. The Triquis adapted the central motif from the Domingo Siete story and brought it over into one of the Coyote and Rabbit stories. As put together the day names form a little rhyme for the days of the week not too dissimilar from the Spanish:

(3) *Gweʔngo, Guwihi, Gweʔn^h^, gizih waʔn^h*
'Monday, Tuesday, Wednesday—that makes three'

*Gwiganʔanh, Giunʔun, Gwetanʔan—gizih watanʔ*
'Thursday, Friday, Saturday—that makes six'.

But the rest of the story is utterly different. The rabbit, having got the coyote to take him to a fiesta, finds there a hostile crowd of people who want to kill and eat him. The rabbit has a friend in the badger who digs him an escape tunnel under the earthen dance floor. The rabbit prolongs his recitation of the days of the week by appending, *Gudungu—gizih chih* 'Domingo—that makes seven', as simply a natural addition. At the appropriate moment our hero falls into the hole that the badger has tunneled and escapes.

5. MISSING THE POINT. Notice that the Triqui adaptation of the *Domingo Siete* motif entirely misses the point of the original story. Unlike the Spanish folklore story the addition of 'Domingo Siete' (Triqui: *Gudungu—gizih chih*) is simply something that the rabbit uses to further his escape. He is a hero for using 'Domingo Siete' to round out his calendar (and save his own life also). The sense of the original Mexican folklore story that somehow the addition of 'Domingo Siete' is something gross and inappropriate does not carry over into the Triqui at all.

6. CONCLUSION. The phenomena we have looked at are very complex. They involve the original Hebrew based seven-day week plus its adaptation to Christian calendars. They

also involve a West African folklore cycle borrowed into Mexican Spanish, and a Mexican folktale whose central motif is borrowed into the Triqui cycle of "the Coyote and the Rabbit" stories. This three-way cultural tangle results in the Triqui story as found above. It illustrates the Mesoamerican adaptation of the seven-day week calendar to their own cultural milieu along with complete inability to get the point of the 'Domingo Siete' story in Spanish.

In a way all this is illustrative of borrowing in general: the tendency to take a borrowed item in something other than its primary sense. This was a point frequently made by Professor Henry Hoenigswald at the University of Pennsylvania in the classroom during the mid-twentieth century. Whether the borrowed item is a lexeme or a discourse/discourse motif, there is misunderstanding on the part of the borrower. Thus, the Spanish *juzgado / juzgao* 'courthouse'/'legal system' comes over as *hoosegaw* or even *jug* 'jail' in English; and the central meaning of the 'Domingo Siete' story (inappropriateness) is lost in Triqui.

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# ON REDEFINING THE IDIOM

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> "The essence of language is idiomaticity."
> – Sydney M. Lamb (Personal communication via e-mail)

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**Abstract:** As usually defined, an idiom is a complex expression whose meaning does not logically follow from the individual meanings of its constituents. This is primarily true of *semantic idioms of decoding*. In this paper I propose an extension of the concept of idioms to include *subgrammatical idioms*, i.e., phonetic, phonemic, and morphemic idioms, followed by the more familiar *lexemic idioms* usually found in dictionaries. To these we also add *phraseological idioms of encoding* extending over several strata. I propose that we recognize five *idiomaticity areas* instead of the previously recognized two or three. The concept of the idiom ranges over the following strata: the phonetic or hypophonemic, the phonemic, the morphemic, the lexemic, and the sememic, and we should explicitly recognize their gradient nature.

**Keywords:** idioms, encoding, decoding, strata, idiomaticity areas

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WHY DO WE SAY *back and forth* rather than **forth and back,* when people usually start by moving forward? Why is *I was taken aback* more readily used than **this/it took me aback?* Why does it conjure up laughter when someone says to a poultry farmer in a hatchery *Don't count your chickens before they're hatched?* Why is it acceptable English to say *they went at each other all day, hammer and tongs?*

Many linguistic theories attempted to answer these questions during the twentieth century. The one that promised the most but arguably delivered the least in this regard was Transformational-Generative Grammar (Chafe 1968, Fraser 1970). None could explain what the difference was between expressions like *back and forth* and *don't count your chickens before they're hatched.* As a non-native speaker of English, this topic intrigued me so much that I was determined to make it my doctoral research. But where to start?

I met Sydney Lamb at Yale in 1964 (Makkai 1965) as I started work on *Idiom Structure in English.* The dissertation appeared in book form (Makkai 1972) and became the foundation of four extant editions of *A Dictionary of American Idioms* (Makkai, Boatner & Gates 2004). My work recognized two idiomaticity areas, the lexemic (*White House, high chair,*)

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and the sememic (*like carrying coals to Newcastle*). This was increased to a third idiomaticity area, the morphemic (*com-passion, con-fabulate, re-sist, re-main*) in the wake of work by Sullivan (1966). This provides a relational network description of English idioms still under the traditional definition that an idiom is a complex expression whose meaning does not logically follow from the individual meanings of its constituents.

I now propose to recognize five idiomaticity areas: the phonetic, the phonemic, the morphemic, the lexemic, and the sememic. I contend that all phenomena referred to here have natural explanations in and are in fact predicted by Lamb's relational network theory, which spans his publications from Lamb 1966 to Lamb 2004.

It was not always easy to be spot on with one's work where Lamb's current thinking was at any given time. As he himself documented in his paper, "The Crooked Path of Progress in Cognitive Linguistics" (Lamb 1971), the model has taken many unexpected turns as it was applied to more and more linguistic problems and became more fully elaborated. Yet it retained the basic postulate of a pure relational network, of lines and relationships between them. It will be the task of future historians of Linguistics to sort this out in parallel with the evolution of the theories of other linguists of the twentieth century such as Bloomfield (1933). Chomsky (1965). Halliday (1980), and Pike's Tagmemics (1967).[1] At present, I turn to Syd Lamb's effects on my own work.

The greatest eye-openers I have gained during my work on English idioms are, in order of importance:

(1) The existence of the relative independence of the various strata, such as the phonetic, the phonemic, the morphemic, and the lexemic; all interpenetrated with semology, formalizable meaning in discourse structure, ultimately dependent on *semantics* and *pragmatics*, i.e., the context of a given situation.

(2) Since Language is a channel of communication between senders and receivers, we must account distinctly for *encoding* something *into* sound and *decoding* something *from* sound.

(3) Words are not things in the real world but connections in a complex network of relationships. To label them at all is merely a matter of convenience, almost as secondary as visual aid.[2]

In my first major publication on idioms (Makkai 1972), I posited only two idiomaticity areas for English, namely the *lexemic* (grammatical) and the *sememic*. I was wrong both in 1965 (when this book was still a doctoral dissertation) and in 1972. If we take Lamb's

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[1] Sadly, the last great work of H. A. Gleason, Jr., was just such a project, a synthesis of twentieth-century thinking, completed but never published.

[2] The reason why this third insight has been hard to live with is that as the update editor of *A Dictionary of American Idioms* (Makkai 2004), not only do I have to collect, explain, and exemplify American English idioms, but I must also count them in order to satisfy the demands and constraints on space put on the various editions by the publisher, Barron's Educational Series.

| LEVEL | IDIOM TYPE | REALIZING |
|---|---|---|
| –1 | phonetic idioms | phonemes |
| 0 | phonemic idioms | morphemes |
| +1 | morphemic idioms | words |
| +2 | lexemic idioms | parts of speech, phrases |
| +3 | sememic idioms | multiple sememic networks or memory traces |
| +4 | hypersememic idioms<br>or pragmemic idioms | texts or plots |

***Table 1.*** *A reclassification of idiom types.*

comment that "idiomaticity is the essence of language" seriously and adjust our focus of research accordingly, it emerges quite naturally that English actually has six idiomaticity areas, as given in **Table 1.**

Levels –1 and 0 jointly constitute the *subgrammatical* idioms of English. Levels +1, +2, and +3 constitute the interrelated areas of grammatical idioms, with + 2 and +3 amounting to the complex of lexo-sememic or semo-lexemic. Level +4 is controversial and may apply only to certain people. But Lamb's concept of the human linguistic system is uniquely individual, so this is no problem. I turn now to the areas labeled -1 and -0, the subgrammatical idioms.

1. PHONETIC IDIOMS (–1). Phonetic features (or phonons) HIGH, LOW, MID, FRONT, CENTRAL, BACK, ROUNDED, etc. for vowels and VOICED, VOICELESS, LABIAL, APICAL, etc. for consonants refer to the articulators used in speech. But they do not combine predictably in any language; the descriptive linguist has to discover what is relevant, whether for synchronic of diachronic treatment. Thus for instance North American English does not have a HIGH + FRONT + ROUNDED combination that adds up to a German-French-Finnish-Turkish-Hungarian type /ü or y/ phoneme, as it also lacks MID + FRONT + ROUNDED realized as an /ö/, an /ö:/ or an /OE/ as in French-German-Hungarian, e.g., *ce sont eux, Goethe*, *ők* 'they', etc.

With consonants, whereas INTERDENTAL + FRICATIVE + VOICED/VOICELESS combine into the familiar English /θ/ and /ð/ as in *thigh-thy, wreath-wreathe*, *thick, theory, thin, either, wither, father,* etc., they do not combine in German, French, or other European languages. One can say, therefore, that the 36-set phoneme inventory of Trager and Smith (1951) amounts to the PHONETIC IDIOMS of North American English. Obviously meaning is not involved except as a decoding judgment of someone's having an American accent.

FEATURES OR PHONONS combine into PHONEMES, as PHONETIC IDIOMS.

2. PHONEMIC IDIOMS. If you take the phoneme inventory as given and look at which of the phonemes amount to recognizable forms, you run into Hockett's (1958) much debated designation of every morpheme as an idiom, since morphemes have no phonemic components from which their meaning could be predicted. Consider the sounds /p/ + /o/ + /t/, first in this order, and then in the reverse, as /t/ + /o/ + /p/. The first combination spells

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the word *pot,* the second spells *top.* I am choosing this trivial example to make the point that Hockett, with whom I disagreed (Makkai 1972), actually had a valid point, one predicted by Lamb's relational network model.[3] Since *top* and *pot* have different meanings, we must conclude that in addition to the PHONETIC IDIOMS we must recognize the PHONEMIC IDIOMS of English, which realize MORPHEMES or monomorphemic WORDS.

At this point we have completed consideration of the subgrammatical idioms and are ready to enter more familiar terrain.

3. MORPHEMIC IDIOMS. Given the wealth of Latinate verbal stems and prefixes, borrowed from Norman French after 1066 or created in the seventeenth and eighteenth centuries as physics and other natural sciences expanded, we can appreciate the distinction between MORPHEME and LEXEME as offered in Lamb's early work going back even to 1964. However, let us start with the less conspicuous, more homespun Anglo-Saxon derived verbs *understand, undergo, go in for, withstand, withdraw,* and some nominal compounds such as *man o' war.*

It is immediately obvious that one doesn't have to stand in any particular place or under any particular awning, shield, or instruments to comprehend something that was said. Yet the verb *understand* forms its past tense exactly as the verb *stand* does, that is *understood* and not **understanded.* But why? Now let us take a look at the combinations with *go.* A person who *undergoes*, that is endures an operation, does not go anywhere or under anything. Yet the past tense of *undergo* is *underwent,* exactly as if the verb *go*, *went*, *gone* were involved. *Go in for* 'to cultivate as a hobby' (*my aunt goes in for harpsichord lessons*) has the past tense *went in for*, and *withstand* and *withdraw,* which have no synchronic connection to standing or drawing, form their past tenses as if they did, *withstood* and *withdrew.* The nominal compound *man-o'-war* 'stinging jellyfish found in tropical waters' or 'navy vessel flying its national emblem', and has no synchronic connection to *man* 'human being'.

Before stratificational theory made this explicit, forms of this nature were swept under the rug as irregular formations or relegated to the lexicon. Whenever they were available, diachronic explanations were attempted.

The number of English lexemes involving a Latin verbal stem, a prefix and a suffix, is huge, so I will only consider here some of the more familiar examples of the unpredictability involved. Consider *defer*, *prefer*, *refer*, *referral*, *reference*, *preference*, *relate*, *relation*, *relationship,* from Latin *fero/ferre/tuli/latus,* 'carry', with prefixes *de*, *pre*, and *re*, and compare some of these with the derivatives of Latin *duco/ducere/duxi/ductus* 'lead.' How do the meanings of *pre* 'before' and *fer* 'carry' add up to *prefer* 'like better than something else'? By the time we reach the noun *preference* with its first syllable stress, we have a rather abstract concept meaning something like 'tendency to like X more than Y', or, to paraphrase it with another Latinate form, 'predilection'.

Why does the verb *relate* use the fourth principal part of the same Latin verb to communicate the meaning 'make similar, compare', adding the suffix *-ive* to communicate 'a

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[3] Hockett's point would have sounded more convincing if he had built it into a more stratified account of the structure of English.

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member of a family'? The usual answer to this is diachronic: English borrowed these words from Latin, but indirectly, via Norman French. They were already MORPHEMIC IDIOMS before they penetrated the English language.

The Latin verb for 'lead' shows up in a number of surprising combinations. With *de* we have *deduce*, *deduction*, terms in logic; *reduce* means to 'make less' most often in connection with unwanted body weight, but we also have *reduce someone to tears,* and *reduction* as in when *the elk become too many the rangers resort to direct reduction.* With the prefix *pro* we have the verb *produce*, but with word initial stress the noun *próduce* means fruits and vegetables in a supermarket. With the prefix *con* Latin *duco*, *ducere*, *duxi*, *ductus* shows up as *conduce, conducive*. But with the fourth principle part we have the verb *condúct,* as in *Sir Georg Solti conducted the Chicago Symphony Orchestra for many years,* but the noun with initial stress, *cónduct*, refers to one's general behavior. Moreover, it is possible to hear someone say the *condúctor's cónduct was unsatisfactory,* speaking about a rude ticket controller on a train.

What is happening here? I suggest, as did Valerie Becker Makkai (1969) and William J. Sullivan (1980), that a significant number of the morphemes of English have combined over the centuries with other morphemes, whose original meaning may or may not be known to us, to create sometimes almost exactly predictable, sometimes rather opaque, and sometimes entirely unpredictable LEXEMES. We may, then, conclude that the next idiomaticity area in English is that of the many MORPHEMIC IDIOMS, which are related by AND nodes to LEXEMES, to which we now turn.

## 4. LEXEMIC IDIOMS.

4.1. NOMINAL COMBINATIONS. Traditionally, the LEXEMIC IDIOMS of English were the easiest to identify. Thus it created no consternation when one stated that *The Wh*í*te=House* is a *white + hóuse*, but not every *white + hóuse* is *The Wh*í*te=House*, or that *hót=dogs* are not food for dogs or made from dog flesh. It has been relatively easy to explain how, for instance, the expression *the old mansion on our street is a white elephant,* does not refer to an albino pachyderm or a normal one that just happens to be painted white, but to 'unwanted property difficult to manage or to dispose of'.

Let us look at few more compounds of this sort. The sentence *that story of his great poverty is a* ***red herring,*** does not refer to a fish colored red; here *red herring* means 'a phony issue'. The historical narrative tells us that in the pioneering days, escaping fugitives would rub decomposing bits of very foul smelling herring on low-lying branches along the paths they were escaping, in order to confuse the sense of scent of the pursuing blood hounds. As Hockett (1958) pointed out, the majority of these idiomatic Adjective + Noun compounds have special stress patterns. Whereas the syntactic compounds *white + house*, *high + chair*, with literal interpretations have the SECONDARY + OPEN JUNCTURE + PRIMARY stress pattern, the corresponding idioms display CLOSED JUNCTURE, that is no pause between the two words, and the stress decreases from PRIMARY to TERTIARY: *The Wh*í*te=House*, (a, the) *hígh=chair*. It would be nice if this pattern were consistent; alas, it is not. The extremely frequent idiom *hót=dog* (with no pause and the primary stress followed by the tertiary stress) has no natural counterpart, only contrived examples difficult to imagine.

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But not all lexemic idioms are nominal in nature. Consider the sentence *our divorcing neighbors went it all day long, hammer and tongs.* Here the idiom *hammer and tongs* 'violently' opens the field of lexemic idioms to manner adverbials. The relatively recent expression *big time*, as in *it's imperative to do something about Afghanistan big time*, lends itself to glossing it as 'seriously, intensely, with earnest concentration' and thus also needs to be labeled as a manner adverbial.

We turn now to idiomatic combinations involving verbs.

4.2. PHRASAL VERB IDIOMS. The four prepositional/adverbial formatives *up, down, in*, and *out* make an easily visualized and symmetric semantic square. Let us ask ourselves how much of this apparent symmetry remains after combining them with some of the most frequent verbs of the English language such as *be*, *call*, *come*, *do*, *eat*, *get*, *go*, *put*, *run*, and *take.* I am greatly oversimplifying this task by limiting the sample to four adpreps and ten verbs, as in Makkai (1972) there are 25 adpreps and 100 verbs. But even from this truncated sample we can see that there ought to be 40 forms with the verb up front followed by the adprep and stressed on the adprep, as in *get UP, get DOWN, get IN* and *get OUT.* But 40 resultant forms are not enough, as we also have nominal forms with the stress on the former verb, as in *GETup* 'fancy costume' or *GOback* 'groceries left at the checkout counter in a supermarket'. Thus one could have 40 more forms.

The system also accommodates *OUTput* and *INput,* that is forms that can function either nouns or as verbs: *Michener's literary* ***output*** *was a new book every other year,* or *give me more* ***input*** *about that proposal.* Now complications arise. Both *OUTput* and *INput* have begun to be used as verbs as well, as in *it was John who* ***inputted*** *the data.* So have four possibilities:

V + adprep as verb = 40
V + adprep as noun = 40
adprep + V as verb = 40
adprep + V as noun = 40

This amounts to 160 possible forms. But many of these possibilities remain unexploited by the language, while the ones that do occur often have unpredictable meanings; meanings, I might add, that have no semantic relationship to the four physical directions suggested by the square. In all of these instances it is clear that the traditional term MORPHEME, once defined by Bloomfield (1933) as the minimal meaningful form, does not necessarily have to have a meaning of its own, or at least a meaning which is the same as a part of its erstwhile lexemic definition.

Indeed we have learned from Lamb and Stratificational Theory, that morphemes can be relationships only, that behave as the full-fledged lexemes they are historically related to, somewhat as if they were open, dried-out shells on a beach from which the mussel that once lived in them had evaporated.

Another important lesson learned from Stratificational Theory is the following: in the case of three-word phrasal verb idioms, such as *come down with* 'contract (a communicable

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disease of short duration)', *go through with* 'persist, insist', etc., the morphological parsing and the intonation correspond to the morphemic stratum, whereas the preposition *with* remains an integral part of the idiomatic lexeme. Even though *grandpa came down with the suitcase* and *grandpa came with the flu* sound alike, i.e., the preposition *with* sounds as if it were not part of an idiom in the second case, only when the object is *the flu* do we decode the meaning 'contracted'. This can be tested by saying *it was the flu grandpa came down with* and *it was the flu grandpa contracted,* as well as *it was the suitcase grandpa came down with* (and this in the context of the speakers' awareness that the suitcase was upstairs in the attic), but not **it was the suitcase grandpa contracted.* The same holds true for *go through with* in *they went through with their wedding plans*, which may be contrasted with a literal or constructed interpretation as in *the occupying forces went through with their heavy armor.* An idiom dictionary must list *come down with* and *go through with*, leaving the preposition *with* in the lemma at the end, in spite of possible discomfort caused by the preposition's grouping with the following NP in terms of intonation.

There are yet more idiom types involving verbs.

4.3. TOURNURE IDIOMS. Beside MORPHEMES acting as building blocks of unpredictable LEXEMIC IDIOMS, we need also to recognize sometimes independent lexemes further combining into unpredictable meanings, such that these unpredictable meanings can often be paraphrased with a single word or lexeme. I have adopted the term TOURNURE 'a turn of phrase' from French for this type of lexemic idioms the size of a full predicate (VP in Chomsky's phrasing) or imperative clauses, typically built on the scheme (TO) VERB THE NOUN, although other possibilities exist. The most frequently quoted example is *to kick the bucket*, 'to die'. One of the most remarkable features of tournures of the *kick-the-bucket* type is that they usually contain a morpheme, in this instance the verb *kick,* which may be inflected for tense and mood, as in *the cowboy kicked the bucket, by midnight tomorrow he will have kicked the bucket / should have kicked the bucket / may/might have kicked* the bucket, etc. Passivization, as in **the bucket has been kicked by the cowboy*, cannot communicate 'died' but only 'his foot came into collision with a pail.'

In many cases the paraphrase requires more than one word, as in the case *of seize/take the bull by the horns* 'face an issue squarely'. Since in easy-to-identify cases, such as *hammer and tongs* 'violently', where the best paraphrase is a single manner adverbial formed with an adjective and the *–ly* adverbializing suffix, we can see both a meaning and a part of speech, we feel more comfortable assigning the status of a single lexeme to define the idiom. But how do we fare with those multi-word forms that require longer paraphrases? Consider *be up a creek*, or its expanded jocular version *be up a creek without a paddle* or *be up a creek without a paddle with two demons dashing forward downstream*, or *be caught between the devil and the deep blue sea*, *be caught between a rock and a hard place*, *to rain cats and dogs*, or *to rain cats and dogs and pitchforks*, or *to fly off the handle*, *to blow one's stack*, and many more, just to mention some better known examples. If these familiar tournure idioms had single word paraphrases as did *hammer and tongs,* one would feel more easily persuaded to treat them as LEXEMIC IDIOMS than SEMEMIC IDIOMS, one level higher up. Let us consider the possible variant forms *Max blew his cool / lost his cool / blew his stack / flew off the handle.* In

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a French-English bilingual dictionary they could all be glossed with the reflexive French verb *s'enrager,* 'to become angry'. Everyone would agree French *s'enrager* is a single lexeme, although realized by a composite of four morphemes: *s'*, *en*, *rage*, and *er*, that is the reflexive, a verbalizing prefix, the noun 'rage' and the infinitive suffix *er.* One would be aided in this instance by the knowledge that lexemes are seldom realized monomorphemically, as we have seen before. By analogically extending this insight into these larger tournure idioms, could they still be called LEXEMIC IDIOMS, that is single entries in the lexicon, even if their paraphrases require a number of other lexemes?

We will have to wait for an answer to this question until we have taken a look at longer, quasi-proverbial idioms, which I called SEMEMIC IDIOMS in the 1972 book.

4.4. PHRASEOLOGICAL IDIOMS OF ENCODING. Phraseological idioms of encoding are fixed expressions that are encoded according to a set pattern, but their meaning is transparent. That is, their form has to be learned, but their meaning is clear the first time they are heard.

> Transparent lexemes can be interpreted in two ways: either via the constituents or via the whole. This is no problem for a network approach. On the contrary, the fact that both kinds of interpretation do occur, presumably in parallel, constitutes further evidence in favor of the network model (cf. Chapter 17).
>
> It is surprising how much ordinary English text is made up of complex lexemes. This observation is important for the study of the cognitive operation relating to syntax since combinations which are 'stored' in memory as units don't have to be constructed for their production or their understanding. Consider the following illustrative examples of lexemes in English:
>
> Relatively short*: horse sense, no laughing matter, not written in stone, as clear as mud, strictly speaking, a people person, the bottom line, a New York minute, painfully obvious, a no-brainer, a dumb question, right then and there.*
>
> Relatively longer: *round up the usual suspects, if it ain't broke don't fix it, you can bet your bottom dollar, between a rock and a hard place, it ain't over till it's over, you know what I mean, the truth of the matter is, been there, done that.* (Lamb 2004:302)

The question arises: what kind of constructions are these? They are a much more semantically transparent than, say, *red herring* or *kick the bucket*, yet they are fixed in form and if someone should venture to alter them, the audience reaction will be amusement or criticism or confusion. Suppose I get tired of always saying *to make a long story short* and say instead *in order to abbreviate my narrative,* or if I should say *fast forward to the pursuit* instead of the familiar *cut to the chase.* I suggest that these rigid multi-word expressions are PHRASEOLOGICAL IDIOMS OF ENCODING, that is, expressions children and foreign learners acquire as whole units and without much analysis.

In the late sixties and early seventies Lamb spoke about THE STRATIFICATION OF THE LEXICON such that there would be a MORPHICON, A LEXICON and a SEMICON. Unfortunately this idea was never pursued, although with the coming of age of computer-assisted scholarship, doing it should have become gradually easier. I would like to suggest that a fourth portion of the ideal English lexicon of the future could be the PHRASICON, the inventory of those IDIOMS OF ENCODING that are semantically transparent to varying degrees, yet rigid in their construction. It will be surprising to see just how many of these there are, starting with *above board, between you and I/me, beggars can't be choosers, choking collar, do or die, dressed fit to kill, enough said 'mongst gentlemen, fooling around, go you one better, go (the) whole hog, till hell freezes over, how do you do?, I like Ike, judge and jury, the kettle calling the pot black, look down on someone, measure up someone, no dice, on the whole, put the cart before the horse, rest assured that, sit well with someone, truer words were never spoken, united we stand, vetting the candidate, wither on the vine, yes-man, x something out, zero in on.* This is not a researched list but rather a random set of examples that came to mind as I was running through the alphabet mentally. Even so it shows that there are enough of these to make up an entire sub-dictionary of English. I guess that their semantic transparency will play out on a gradient while they will share in common the fixed nature of their constituent form

5. SEMEMIC IDIOMS. Let us look at one of the better known proverb-type sememic idioms, the fairy tale moral *don't count your chickens before they're hatched.* It is obvious that it cannot be paraphrased by a single verb like *kick the bucket* 'die', so it has to be dealt with on a different level. This proverbial idiom is an old stand-by deriving from one of Aesop's fables, and has numerous international parallels. For instance in French it goes *Ne vendez pas la peau de l'ours avant de l'avoir tué*; this is echoed by the Italian *No vendere la pelle d'oso prima di averlo preso*; in Russian there are two versions, one with 'chickens' the other one with the 'bear', respectively, *cepljat po osen'yu sčitayut*, or *medved' eščë v lov'e a ty uzhe medved'a prodaëš.* The French means 'do not sell the bear's hide before you've killed it'; the Italian says 'don't sell the bear's hide before you've captured it'; the first Russian version says 'chickens are counted in the fall'; the second one 'the bear is still being hunted, but you are already selling its hide'. We have it in Hungarian also as *Ne igyál előre a medve bőrére,* meaning 'don't drink (a toast) in advance onto the bear's hide'.

Unless you say this yourself or observe it being said to an actual farmer who in a hatchery actually counts future chickens under an incubation lamp, in which case the question can always arise whether this farmer has ever heard it, this idiom has nothing to do with chickens. Instead, it means 'refrain from celebrating the success of your undertaking prematurely [lest it misfire involving you in embarrassment].' The second part starting with [lest it misfire ...] is put in brackets as it is not strictly necessary. This proverbial idiom is so often heard and therefore so well remembered that takeoffs and abbreviations can often be observed as in *he's counting his chickens already, will his chickens ever hatch? Not a single one of his chickens will ever hatch*, etc.

The literal interpretation and the shortest compulsory paraphrase appear to be linked by what we may call a situational or pragmatic enabler, a link that clarifies whether it was

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the literal or the idiomatic meaning that was intended as well as perhaps indicating whether the idiom *qua* idiom 'fell on deaf ears'—as we sometimes say—or whether it was understood and appreciated, perhaps even rewarded with laughter.

But let us turn to another well known idiom, the form *Any port in a storm!* This is usually paraphrased as 'help is welcome in an emergency wherever it happens to come from.' It may, of course, be used literally by a sailor in distress steering his boat into an enemy port where he hopes to get POW status and fair treatment, which is better than drowning at sea.

There seems to be an intricate interplay of three strata going at once: the LEXEMIC, the SEMEMIC, and as situational sponsor, the HYPERSEMEMIC or PRAGMEMIC. To me this suggests that perhaps the LEXEMIC and the SEMEMIC IDIOMATIOCITY AREAS are really one complex network and also depend on the CONTEXT OF SITUATION or on PRAGMATICS.

At this point we ought to take a closer look at the difference between ENCODING and DECODING, as one of the lessons learned from Lamb. I left this important point to be at the borderline between what I called the GRAMMATICAL IDIOMS and what I suggest are the HYPERGRAMMATICAL IDIOMS. Consider these sayings: *Early to bed and early to rise, makes a man healthy, happy and wise*; also *there are more things in Heaven and on Earth than are dreamt of in your philosophy*; *a stitch in time saves nine*; and many more. The first one is a little rhyme given to posterity by Benjamin Franklin, the quote on philosophies is from Shakespeare's *Hamlet,* the last one is a home-spun adage about the mending of socks and other torn pieces of clothing. As such, the last one can be extended to other areas, such as fixing electric lights and plumbing while they are still easier to fix. The FORCE OF A QUOTATION rests in the fact that it may bring prestige to the speaker and also indicates awareness that this is probably the best way to phrase something: "I have just quoted Benjamin Franklin and/or Shakespeare, therefore you had better pay attention to what I have said."

6. HYPERSEMEMIC OR PRAGMEMIC IDIOMS? Back in the late sixties Lamb brought to my attention two pragmatic idioms. He suggested the following situation: A boy and a girl are taking a late afternoon walk in the woods, when the girl unexpectedly says: *It's getting chilly, isn't it?* The question is what she has in mind. First, it may be an objective observation about the change in outside temperature without any expectation of a response, or it may be a suggestion to terminate the walk and go back to the house, or it may be a shy request either to be hugged and held more closely, or for the young man to put his jacket around the girl's shoulders. To appreciate these nuances, imagine that you wrote a theatrical play in which this couple is taking a walk and the female member of the pair says *It's getting chilly, isn't it?* As a playwright it is your job to add instructions to the director of the play, such as "in a disgusted and urgent voice," "flirtatiously, while drawing closer to the boy," "matter-of-factly, as if not expecting any reply," etc. Playwrights fail if they omit such instructions since they know that the words spoken will only deliver part of the intended message, while the rest must be performed. The one major difficulty with this type of language use is that you must abandon your conveniently pre-manufactured linguistic schemes and take several excursions into the spoken and narrated or written and published forms of literary language.

In Stephen C. Levinson's book *Pragmatics,* (Levinson 1983: 102), there is an interesting example. Levinson introduces Grice's conversational implicatures in the following exchange:

A: Where's Bill?
B: There's a yellow VW outside Sue's house.

Is B rudely changing the subject by giving A a non-answer? This would probably be the case if B had said *The Earth's natural meridian does not run through Greenwhich but rather through the Great Pyramid of Gizeh.* But by having heard what B did say, A can infer that Bill has a yellow VW and since he is known to be courting Sue, therefore, although B cannot swear to it in a court of law, chances are that Bill is at Sue's place.

Is this kind of exchange in any sense idiomatic? I ask this not as a rhetorical but rather as a real question. As a practical lexicographer of idioms, I must admit that no dictionary is likely ever to include this as one of its entries. This kind of exchange requiring the Principal of Co-operativeness as a Conversational Implicature is simply beyond both grammar and the lexicon. It has a great deal in common, however, with the example *it's getting chilly, isn't it?* mentioned earlier.

To me it seems clear that as Lamb (2004:359) quotes Benjamin Lee Whorf:

> Every language is a vast pattern system [...] in which are culturally ordained the forms and categories by which the personality not only communicates, but also analyzes nature, [...] channels his reasoning, and builds the house of his consciousness.

Language is truly open-ended on the meaning side. Phonemes and morphemes change, but they do so relatively slowly. The lexicon is another matter. As the newer editions of the OED show, great increments to the lexicon of the English language have been registered, especially since the computerization of the OED in Kitchener, Ontario, Canada in the 1980's.

Beyond that, meaning remains open-ended. Just as tomorrow's newspaper hasn't been printed yet and tomorrow's newscast has not yet been aired on TV, neither can we predict what sayings by whom will become memorable enough to become part of the culture. Language is, therefore, like a funnel: broad and open on top, and narrower and narrower as we move down to the keys of a typewriter or the 36-phoneme or 16 phonemic feature inventory of spoken American English. Each time we say "yes" or "no" or "please," we are in fact referring to something different, and it is in this effort of tracking the constantly changing contexts we use that real human languages show their true nature: pervasive idiomaticity.

7. CONCLUSION. To sum up the redefinition of the idiom, I present seven statements we learn from Syd Lamb's 1999 book *Pathways of the Brain*:

(1) There are probably no pragmatic idioms, only different texts, different kinds of discourse, requiring "explication de texte."

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(2) Strata and levels matter less than size.
(3) Even phoneme clusters can be lexicalized, i.e., *str, pl,* etc. can be regarded as something like a phoneme, as per Alfred Noreen's suggestion in the early twentieth century.
(4) Idioms can be parallel-processed *qua* idioms or as literal constructs,
(5) It is a mistake to indulge in "either-or thinking"; it is neuro-cognitively sounder to allow for "both-and" thinking.
(6) Entire texts, such as the *Pledge of Allegiance* as recited by a little boy who doesn't understand the individual words, can be seen as a single lexeme, or by stretching a point, as a hyperphoneme.
(7) We need to create reliable frequency lists, because phrases that we hear more often show stronger connections, similar to a well trodden path in a park or in a forest as opposed to a first path in the jungle.

And never forget that these insights emerge from Lamb's relational network theory, which is unchanged in its basic postulates since 1964.

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# A CASE STUDY OF LINGUISTIC ISOLATION AND QUESTIONS ABOUT SUBSEQUENT LANGUAGE SUPPORT AND EDUCATIONAL PROVISION IN THE UNITED KINGDOM

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**Abstract:** We present findings from a case study of a congenitally deaf, linguistically isolated eight year old girl, Tanya, who entered the United Kingdom at this age with her family from Slovakia. Prior to this date Tanya's hearing loss had not been aided, nor had she attended school; the only language of the home has been spoken Slovak. We explore the educational and communication—including homesign—implications of this case and the possible effects of Tanya's severely restricted access to any form of language from birth until the age of eight on language acquisition.

**Key words:** Linguistic isolation, deaf, homesign, language acquisition

Linguistic isolation is a rare and thus rarely reported condition in which lack of access to language during the first years of life results in long-term limited language acquisition, despite the provision of subsequent language stimulation. Children who experience linguistic isolation fall into three broad groups: children who suffer extreme and protracted deprivation; feral children; and children with a hearing impairment which is not aided sufficiently to allow them access to spoken language and who also do not have access to sign language.

The most famous reported case in the first category is that of Genie (Curtiss 1977): the academic, peer reviewed literature relating to Genie represents by far the largest data set about language acquisition and the impact of linguistic deprivation available for this group of children. Genie was born into an environment where she was deliberately isolated by her father from most human contact and interaction, including language; she was kept alone in a single room, secured to a "potty chair," and beaten when she made any noise. This extreme privation continued until she was thirteen, when she was rescued and brought to the attention of the authorities by her mother. At this stage Genie had no language. The consequences of the deprivation that Genie suffered for her language acquisition are nevertheless contested and not straightforward. In summary, one interpretation is that: despite subsequent extensive medical, psychological, social and linguistic support Genie's language development has remained extremely limited; her lexicon is reported as restricted and her grammatical competence as severely compromised (Curtiss 1977; Newport 1990). An alternative interpretation is that even though Genie appears to have been deprived of access to language, as a result of her severe isolation and maltreatment, the

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available linguistic data indicates that she has indeed acquired some aspects of English syntax, that some of her utterances demonstrate hierarchical structural organization in that they employ embedded clauses, and also that her language is rule-governed and appears to demonstrate recursion (Jones 1995). Moreover, for all children who fall into the category of linguistic isolation through deprivation, it is difficult to disentangle the possible impact on language development and language behaviours of the physical, psychological and emotional trauma of this condition from an underlying possible cause attributable to insufficient access to language during a critical period. The scarcity and ambiguity of evidence provided by these cases yields at best equivocal data about the parameters and robustness of a critical period for language acquisition.

The data surrounding the second category of children subject to linguistic isolation, the category of feral children, namely children who have been raised by dogs, wolves, and other animals, is even more scarce than data pertaining to children who suffer linguistic isolation through deprivation; it is more difficult to make judgements about critical age theory from the data relating to feral children than it is from the data derived from children who suffer linguistic isolation through deprivation.

The third category of children who are linguistically isolated is made up of children with a congenital hearing loss that is severe enough to impede access to spoken language and who, for various reasons, do not have their hearing loss aided so that access to spoken language is sufficiently mediated to allow spoken language acquisition to occur, children who also have bi access to sign language. This third category is by far the most robustly documented, since apart from studies of individual acute, chronic cases (for example Grimshaw et al. 1998, Morford 2003, Emmorey & Herzig 1994), there is a substantial body of literature from within the field of deaf education, audiology, and cochlear implantation that reports on the effects of poor and limited access to language. For example, Hammes et al. (2002), in a cohort of 47 children showed that children who underwent cochlear implantation under 18 months of age on word recognition tests were on average 80% successful, with scores on the same test progressively declining for children who were implanted when they were older, then reaching a plateau: so that, between 19 and 30 months children were on average 56% successful, levelling out between 31–40 months and 41–48 months when children were on average 39% accurate. The same cohort of children showed the following pattern for scoring within one chronological year of their norm for spoken language skills following implantation: 70% for the under 18 month group, falling respectively for each subsequent respective older group to 30%, 10%, and then 1%. Svirsky et al. (2004) found from a study of congenitally deaf children implanted between one and three years that children who were implanted at a younger age consistently outperformed older children who were implanted later in terms of speech perception and standardised language scores. Indeed, throughout the literature, this pattern is repeated, indicating that children respond best in terms of effective language acquisition when they have good access to spoken language at the earliest possible age.

This finding, however, prompts a number of important questions: language acquisition does not appear to be an all or nothing process, since children exposed to language stimulus from all three language isolation categories do appear to have acquired some language, but

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| **Frequency** | **250hz** | **500hz** | **750hz** | **1khz** | **2khz** | **4khz** |
|---|---|---|---|---|---|---|
| **Right** | 40db | 55db | 90db | 95db | 115db | 115db |
| **Left** | 45db | 65db | 95db | 100db | 115db | 120db |

***Table 1.*** *Tanya's audiogram.*

what, if any are the aspects of language that appear to be tied to a critical time frame? Do children who are linguistically isolated and acquire even only a limited amount of language pass through similar early stages to children who acquire language normally? Communication can occur without language, at least without language understood as being human language, but to what extent, if at all, can this human proclivity towards communication, be distinguished from, or to what extent is it part of, the human language acquisition process?

So far, we have only discussed spoken language; there is now a substantial body of research in human sign language, which convincingly demonstrates that children acquiring sign language as a first language pass through the same stages, albeit in a different modality, as children acquiring spoken language (Pettito 1987, Petitto & Marentette 1991, Mayberry & Squires 2005). Moreover, there is also evidence to suggest that children coming to sign language late, from a background of linguistic isolation, experience problems like those of children with normal hearing suffering linguistic isolation who are then exposed to spoken language. For example, Emmorey and Herzig (1994) note that Anna, who was born deaf, developed homesign, and was introduced to American Sign Language (ASL) at 16, was unable to acquire the syntax of the language; and Morford (2003) discusses the cases of two deaf children who had developed homesign and were then exposed to ASL at 13 years, 7 months and 12 years, 1 month at a school for the deaf, with both children having significant problems with comprehension and the syntax of ASL after seven years immersion in an ASL environment. These cases of deaf children raise the same questions noted earlier about the level of language that children might be expected to develop, given a linguistically isolated background; too, the significance or insignificance of a human proclivity towards communication, demonstrated through the development of homesign, within the acquisition process. Indeed, research has shown that delays in children's lexical and syntactic development, regardless of modality, can impact on other forms of cognitive development, such as theory of mind, which in turn can slow the development of overall communicative competence (Schick et al. 2007). It is with these questions in mind that we turn to Tanya.

2. METHOD. We were notified of Tanya by the Deaf Education Service in a Local Authority in England. At the time of assessment Tanya was eight years and three months old, the second of seven children from a monolingual Slovak speaking family who had arrived in the United Kingdom from Slovakia fout months prior to our knowledge of Tanya. Three of the children including Tanya have a hearing loss, and another sibling has a visual impairment. Tanya's hearing loss was diagnosed in her first year, but she was not aided until she entered the United Kingdom, aged 7 years, 3 months, nor did she attend school in Slovakia. Tanya's audiogram is reproduced in **Table 1.**

Since normal conversation is generally around 60dB, Tanya's audiogram indicates that only the sounds of speech in the lower frequencies will have been available to her and these

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| Draw-a- | Man | Woman | Total |
|---|---|---|---|
| Raw score | 30 | 25 | 55 |
| Standard score | 105 | 89 | 97 |
| percentile | 63 | 23 | 42 |

***Table 2.*** *Tanya's scores on the Goodenough Draw-a-Man test.*

only poorly when good acoustic conditions and a single sound source prevailed. Whilst this may have been sufficient to access the prosody of the language that surrounded her, and also, with attention to lip patterns, for her to be taught a few words, her hearing thresholds at 750Hz and above rule out the opportunity for Tanya to acquire spoken language, given that her hearing loss was not aided prior to 8 years, 3 months. In effect this means that Tanya has been linguistically isolated, as described above. This prognosis broadly matches our findings when we observed Tanya and interviewed Tanya's parents through a Slovak interpreter. They reported that Tanya was able to say "mama," "radio", "house", and "papa" in Slovak, which she did in front of us whilst pointing to those objects: these words were easily intelligible to the interpreter who had no prior knowledge of Tanya and her family.

Following assessment of her hearing Tanya was fitted with a single Phonak Eterner 311AZ hearing aid in her left ear; impacted wax in her other ear made bilateral fitting impossible at the time of assessment. Whilst it was impossible to gauge aided thresholds through listening tests, ordinarily achieved through a procedure where the patient repeats English words with accuracy scored according to syllabic reproduction by the patient, the aids were programmed to enhance hearing to produce aided thresholds of around 25db at 500Hz and below using the Siemens Unity system. Digital aid technology remains, however, unable to provide Tanya with aided thresholds better than around 45dB for frequencies above 750Hz, given her audiogram, according to readouts from the Siemens Unity. This means that in addition to problems that Tanya might experience processing language because of her linguistic isolation she will also find accessing spoken language problematic through her hearing aids.

Tanya's cognitive ability was assessed through a number of formal and informal procedures. These included observations of Tanya during her audiological assessment, during which she failed to be conditioned by and comply with the protocols for a headphone test, so that her hearing levels had to be gauged via performance testing, a method of assessment ordinarily reserved for children aged between 0 years, 7 months and about 3 years. At the time this was taken to be a possible indication of low cognitive ability. Her failure to follow any of the protocols for any of the tests for non-verbal reasoning conducted by the Educational Psychologist and her low score on the Raven's Progressive Matrices (Raven et al. 1998), placing her in the bottom 5% of the population for non-verbal cognitive ability, tended to support this original possibility. Later evidence, however, contested this view. Her results for the Goodenough Draw-A-Man test (Harris 1963), designed as an IQ test having a high correlate with the Binet and Wechsler (*ibid*) indicates normal intelligence for her age. Tanya's scores are given in **Table 2**, together with her performance on the Draw-a-Woman.

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Tanya's family also reported that she was able to follow the routines of the household independently, such as making her breakfast, choosing her clothes, playing with her siblings, watching television, and that she also expressed preferences, made choices and communicated her wishes, likes, and dislikes about these and other domestic matters. These behaviours are much more consistent with Tanya having an age appropriate IQ than a cognitive ability indicated by her score on the Raven's Progressive Matrices. Similarly, on a visit to the home, Tanya learnt how to play tic-tac-toe independently, despite never having encountered the game before. For Tanya to do this meant that as well as being able to remember and follow the rules of the game, she also had to anticipate and make informed choices based on her understanding of the rules and her opponent's strategy. Again, this is much more consistent with Tanya's IQ being normal for her age than her cognitive ability being limited to the bottom 5% of the population.

Finally, we observed Tanya playing with her 13-year-old sister, Olanda, through a two-way mirror, and recorded their interactions on video tape. Olanda is also congenitally deaf. She was diagnosed as such when she was two and was fitted with aids, which she wore only intermittently. From the age of five she attended a special school in Slovakia where the medium of communication was through spoken language.

During the recorded session the girls played with a hairdressing doll's head; they were also provided with pens, crayons, paper and other toys. We later analysed the 45-minute video and coded the first ten minutes of their interactions. The recording revealed that despite the fact that both girls made sounds, the communicative content of these sounds seemed to be limited to one of accompanying gestures, particularly the following: accompanying gaining attention through gestures and body orientation, accompanying emphatic communication, and accompanying points of surprise. Many of the sounds that Tanya made seemed to be babble, that is pre-linguistic verbal behaviour typical of the language development of normally developing children with normal hearing. Babbling has also been observed and discussed in other deaf children, for example by Oller et al. (1985) and Scheiner et al. (2004), and would therefore seem to be a natural stage in linguistic development; however, this stage does not normally occur at around 8 years of age, and given the level of Tanya's language development would appear to be a vestigial behaviour which is not necessarily indicative of future language development. Indeed, Bebko, Calderon, and Treder (2003) note that deaf children may idiosyncratically incorporate behaviours into their own communicative related activities, which is what Tanya may have done with regard to babbling, especially as we observed its occurrence when Tanya was on her own, and also that it was disregarded by her sister when she was present. Again, this may indicate the vestigial nature of babbling for Tanya rather than it being the precursor of more systematic future language growth.

3.RESULTS. In this section we concentrate mostly on our findings from the analysis of the video of Tanya and Olanda (Appendix 1), during which we limit ourselves to the first ten minutes of the recorded play.

We begin with a general observation. Language can be structurally characterized by its possession of a lexicon and morphological and syntactic patterns that are fairly consistently

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applied, resulting in grammatical strings. This structurally distinct quality of language – its lexical, morphological and syntactic components – is important in relation to our description of Tanya's communication with her sister: the structural quality of language helps us make what seem to be important distinctions between the nature of Tanya's homesign and communication through language. Homesign tends towards gestures that are largely dependent upon context for meaning; its gestures are often imagistic and immediately referential to surrounding objects and activities. Nuances of meaning in homesign are on the whole produced by gestural emphasis rather than the employment of a range of lexical items, morphological inflections or syntactic devices, which homesign tends to lack. Similar points about the difference between language and homesign have been made by other researchers including Schembri et al. (2005), Emmorey and Herzig (2003), and Okrent (2002). On this basis it seems clear that Tanya's communication is not language.

In all, during the first ten minutes of the video, we recorded 49 distinct communicative actions. Most of these are by Tanya. The communicative actions are numbered and described in the order that they occurred in Appendix 1, with a second number after the number of each chronological action indicating the time of each action after recording commences. A number of related difficulties in terms of the distinct identity of each communicative action are immediately obvious when looking at Appendix 1. The first of these is that what would normally be considered paralinguistic activities, such as body orientation, eye contact and laughter are integral to the meaning and even composition of each communicative action. An example of this is given in (1).

(1) 1.41 TANYA directs eye contact and body orientation to OLANDA and points to section of doll's hair

Ordinarily in language the arbitrary and formalised nature of its structure help us to distinguish between single and multiword utterances. How, then, should (1) be characterized: as a single or a multiword utterance, though perhaps multi-component communicative action would be a better description here? Whilst only a single gesture occurs in (1), namely the act of pointing, the communicative intent of (1) is dependent upon Tanya's eye contact and her body orientation in relation to her sister, with the semantics of (1) being something along the lines of: we should be working on this section of hair. We only know about the semantics of (1), however, because it is embedded in subsequent communicative actions: in (2) Tanya is frustrated by Olanda's failure to follow Tanya's directions in (1); and in (3) Tanya explicitly expresses dissatisfaction with where her sister is working, by wagging her finger over the section of hair that Olanda is combing, and then picking up a different section of hair.

(2) 1.45 OLANDA ignores TANYA; TANYA responds by pointing to own eyes and directs fingers to section of hair
(3) 1.52 TANYA wags finger over section of hair she is working on and picks up another section of hair

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This embedding of semantic content in other communicative actions makes it all the more difficult to satisfactorily distinguish individual gestures from each other. This does not seem to be the same for language, in which the categories contained within the lexicon and the principles that determine their combination, through the syntax of language, allow for the relatively clear identification, for example, of verbs and arguments. We can see this if we attempt to paraphrase (1), with the imperative sentence in (1)'.

(1)' Olanda, work here.

In (1)' the verb has two arguments. The first of these is the subject, "Olanda," associated with the thematic role of agent (or indirect agent, since as the sentence is in imperative form, the direct agent is Tanya). The second argument is the adverb, "here," which is associated with the thematic role of location. (1)' can be split into these parts because of the stability of the language structure; this allows us not only to readily identify the referent of "Olanda" but also to attribute different properties to "Olanda" through a predicate structure, "Olanda is happy," which can be inflected for modality, "Olanda will be happy," which can be consistently applied to all subjects, for example "Sandy is not happy," allowing for abstract comparisons, "All people should be happy," and so on. It is much more difficult, however, to identify the different components of (1). It is not very satisfactory to suggest that the subject of (1) is determined by the eye contact that Tanya engages her sister with, nor by the orientation of Tanya's body towards her sister, nor by the combination of these communicative actions. This is because the semantics of (1), in which Olanda is identified as the subject (the indirect agent of the imperative communicative action) only occurs when both eye contact and body orientation are combined with the pointing gesture, as a unified and meaningful interaction. Even that, though, is not enough to make Olanda the indirect agent of (1), since the action of pointing is only meaningful in the context of the hairdressing doll's head, and the position that it holds within this communicative context.

Whilst in a sense it is easy to declare that Tanya's homesign lacks the category proper noun, or more generally, N, this misses the point: the way that Tanya's homesign appears to function means that there is no place for the category N, nor is there a place for any of the other categories traditionally associated with language. Unlike language, Tanya's homesign appears to depend on immanence, and because of this the particular meaning attributed to even concrete objects, such as the hairdressing doll's head, occurs within a specific communicative context and therefore also within a specific time-frame. Again, this is markedly different to the way that language works. If, however, our analysis of homesign is correct, we might expect Tanya to have particular difficulty in acquiring those aspects of language where time and identity are abstractly signalled and realized, namely aspects of language that deal with tense and case. Indeed, in the literature to which we have referred dealing with children who have been linguistically isolated, difficulty in acquiring these and other related aspects of language does seem to be a common factor.

A final indication of the rather embryonic stage of Tanya's communication skills is the relative lack of iconic gestures in her homesign. As Tolar et al. (2007) note, the use of icons by deaf children and the ability of both deaf and hearing children to interpret icons

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develop with age. Iconicity is, however, usually a productive feature of both sign and homesign by the time deaf children enter school: the virtual absence of icons in Tanya's homesign, at eight years of age, would therefore seem to underline the extent of her language delay.

4. DISCUSSION. The Local Authority charged with providing for Tanya's educational placement and support are keen that she receives the most appropriate linguistic input in the most beneficial educational environment. Tanya's family also want the best educational and linguistic outcomes for Tanya. Indeed, the inclusion of families in early language intervention programmes has been shown to have a significant influence on the success of language outcomes for deaf children (Sarant et al. 2009). Questions about whether Tanya should receive education through British Sign Language in a specialist school for the deaf, or whether she should be educated in a local mainstream school where the curriculum is delivered in English, but where some sign language input might be provided, are pressing. It is impossible to give categorical answers to such questions. Other factors also have to be considered, including the social impact that education in a specialist sign school for the deaf would involve because of the daily taxi journey of around two hours, taking Tanya away from the children in her area, with whom she might otherwise make friends and establish support networks. If Tanya was to learn British Sign Language (BSL), and it was to become her main form of communication, Tanya's family would also need to learn BSL in order that she did not become isolated in her home.

A key and unanswerable question bearing upon the decision about where and how Tanya should be educated is: will she be able to acquire spoken language? The evidence that we have reviewed about linguistically isolated children is far from conclusive, since such cases, as we have discussed, are rare. Nevertheless, we know of no cases in the literature where children who have been linguistically isolated have gone on to acquire the full grammar of a target language. Moreover, any effect of a critical period for acquisition of a first language ought to have as much bearing on the acquisition of a sign language as well as a spoken language. There are, however, two additional considerations that are important. The first is that Tanya's access to spoken language is at best partial, given the current level of digital aid technology: for a number of reasons a cochlear implant is not an option for Tanya. The second consideration is the difference that we have tried to demonstrate between homesign and language. Whilst BSL has the same linguistic structure as other languages, including spoken languages, in the sense that it has a lexicon, morphological and syntactic regularities—a structure which appears to be absent in homesign—it would probably be easier for Tanya to acquire some of the elements of this structure, even if only partially, through BSL rather than through a spoken language. This is because some aspects of BSL lend themselves to iconicity and the here and now in a way like the way that Tanya's homesign seems to depend on immanence. Doubtless, those responsible for Tanya's education will want to move Tanya's communication beyond the context of the immediate and the concrete. This important move would seem to us to be more difficult to encourage and develop for Tanya in a communication system that only abstractly articulates this level of linguistic competence, such as English: that some parallels already exist between BSL and homesign is likely to make access to communication beyond that which is perceptibly and immediately present for Tanya a more possible achievement.

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## APPENDIX

The first number refers to the chronology of the communicative action; the second number refers to the time in minutes and seconds (taken from the recording) at which the communicative action occurred.

(1) 1.41 – TANYA directs eye contact and body orientation to OLANDA and points to section of doll's hair
(2) 1.45 – OLANDA ignores TANYA; TANYA responds by pointing to own eyes and directs fingers to section of hair
(3) 1.52 – TANYA wags finger over section of hair she is working on and picks up another section of hair
(4) 2.10 – TANYA turns to OLANDA and gestures with sweep of hand over section of dolls hair being combed, which looks to require some significant effort
(5) 2.40 – OLANDA orients self by raising upper body in chair (appears to be response to previous gesture by TANYA)
(6) 2.59 – TANYA taps OLANDA then points to where working on hair: both nod (appears to be an agreement: if so refers to at least previous three conversational turns)
(7) 3.39 – TANYA "singing" and verbal "clicking"
(8) 3.49 – doll slips on table, TANYA shakes head, OLANDA laughs

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(9) 3.56 – TANYA engages OLANDA in eye contact and vocalizes twice, OLANDA shrugs (seems to indicate she does not know)

(10) 4.18 – TANYA points twice at place she is working on hair

(11) 4.43 – OLANDA gestures to own eyes then extends same arm over doll's head

(12) 5.08 – TANYA gestures, touches OLANDA with brush, touches her own face, vocalizes, OLANDA shakes head

(13) 5.41 – TANYA vocalizes

(14) 5.58 – TANYA continues to vocalize, looks at TANYA, touches OLANDA's hand to gain attention, points to hair

(15) 6.01 – TANYA continues to vocalize, points to OLANDA and directs attention by pointing towards place in hair where she is plaiting

(16) 6.02 – OLANDA responds vocally and nods

(17) 6.03 – OLANDA gestures, with both palms forward, seems to indicate finished

(18) 6.04 – TANYA vocalizes and OLANDA raises right palm

(19) 6.06 – TANYA opens both palms and looks at OLANDA: seems to indicate not finished (a mirror of OLANDA's gesture at 6.03)

(20) 6.08 – OLANDA touches place on doll's head where TANYA has been working

(21) 6.10 – TANYA looks but does nothing

(22) 6.11 – HI moves doll's head round and works on place she has indicated

(23) 6.19 – TANYA has beads and wants to put them in doll's hair, OLANDA still combing so not allowing TANYA to do this, TANYA touches OLANDA with beads, vocalizes, shows OLANDA the bead in her hand, OLNDA laughs

(24) 6.23 – TANYA sighs, vocalizes, touches OLANDA and seems to indicate with pushing forward of bead gesture towards OLANDA that OLANDA should put the bead in the doll's hair, OLANDA laughs and continues combing

(25) 6.29 – TANYA puts the bead down

(26) 6.45 – OLANDA uses both hands to comb, vocalizes whilst engaging TANYA in eye contact, gestures with her head in the direction of soft toys on the table, then uses the same gesture at TANYA, then nods

(27) 6.48 – TANYA looks in the direction of the soft toys but does nothing else

(28) 6.49 – OLANDA directs TANYA's attention to something on the table by pointing and vocalizes at the same time

(29) 6.51 – TANYA does not follow OLANDA's direction, but taps the side of the doll's head with her finger, OLANDA vocalizes and indicates the thing on the table again by nodding at it

(30) 7.16 – OLANDA engages TANYA in eye contact and vocalizes

(31) 7.36 – TANYA vocalizes with an exaggerated facial expression, OLANDA laughs

(32) 7.39 – OLANDA laughs and points across TANYA

(33) 7.44 – TANYA vocalizes, OLANDA shakes her head

(34) 8.03 – TANYA gestures: puts spread thumb and forefinger to her mouth and throws this away from herself, as if spitting

(35) 8.05 – TANYA gestures with a finger over the doll's head, wagging the finger back and forth whilst vocalizing

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(36) 8.07 – OLANDA gestures with her open palm moving it across her body
(37) 8.11 – OLANDA points to OLANDA with plastic stick, then points back to the doll's head, vocalizes, shakes her own head and looks down
(38) 8.34 – whilst TANYA continues to plait hair she vocalizes, then raises two bunches in hands: it seems to indicate she wants the hair to stand up in plaits
(39) 8.58 – OLANDA attempts to intervene in what TANYA is doing; TANYA raises shoulders and vocalizes; OLANDA stops attempt at intervention
(40) 9.01 – TANYA turns to face OLANDA, makes facial expression and vocalizes; OLANDA works on another section of hair
(41) 9.10 – TANYA smiling, claps hands, vocalizes, drops plaits and points to what she has done
(42) 9.11 – OLANDA vocalizes, nods to TANYA; TANYA vocalizes, turns towards OLANDA and raises hands
(43) 9.16 – TANYA raises plait from doll's head in an exaggerated manner and looks at OLANDA; OLANDA laughs and moves back in her chair
(44) 9.20 – OLANDA picks up plait dropped by TANYA; TANYA puts both hands on own hips and sits forward in an exaggerated way looking at the plait
(45) 9.24 – TANYA vocalizes points to self with extended index finger whilst looking at plait, taps the side of her own head with the same finger then points to plait OLANDA is working on, then works on the same plait
(46) 9.34 – TANYA repositions herself on chair to side, engages OLANDA in eye contact, points to OLANDA with extended finger and points to doll's head in continuous gesture, vocalizes; OLANDA vocalizes
(47) 10.47 – OLANDA gestures over doll's head with open hand and vocalizes; TANYA grimaces and shakes head
(48) 10.48 – TANYA vocalizes and again shakes head
(49) 10.51 – TANYA makes big gesture with left hand and arm raised above head and moving away from body as she has indicated she wants the plaits to stand up from the doll's head, almost coming off the chair as she does; OLANDA laughs

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# FOCUS ADVERBS IN SPANISH: A COGNITIVE-FUNCTIONAL ACCOUNT AND SOME NEUROCOGNITIVE HYPOTHESES

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The aim of this article is to explore the communicative uses of focus adverbs, in particular of the adverb *justamente*, from a cognitive-functional approach. The analysis is based on the assumption that the relationships among metadiscoursive devices, and the **fields of adverbial attraction**, in which a focus adverb appears, are evidence in favor of Langacker's **dynamism of conceptualization hypothesis** and the related concept of **focus chain**. After having described the different sorts of focus adverbs from a cognitive point of view, some cases of focus chain instantiation with the adverb *justamente* are analyzed in a corpus of semi-spontaneous dialogues and academic lectures. Three main objectives guide this analysis: a) to identify the communicative acts where this adverb is emplyed; b) to observe whether the elements of the two cognitive domains connected by *justamente* belong to the same domain; and c) to examine the possibility of overlapping functions between adverbial categories. Finally, it is suggested that some of the hypotheses discussed in the paper have neurocognitive plausibility in Lamb's sense.

**Keywords:** Spanish**,** focus identification adverbs, cognitive-functional approach, focus chain, neurocognitive plausibility

**Languages:** Spanish

FOCUS ADVERBS are part of a quite large and heterogeneous group of adverbs that accomplish a peripheral function; in other words, they do not modify or depend on the verbal nucleus of the sentence (Kovacci 1999; Wotjak 1996). In the case of focus adverbs, their scope extends to "nouns, adjectives, adverbs, verbs and constructions of different types and extension"[1] (Kovacci 1999: 772). In semantic terms, peripheral adverbs are said to have a "contextual role", in the sense that they relate the construction modified to "external meanings" (Álvarez Martínez 1994: 41).

In keeping with the approach selected here, the main purpose of this paper is to describe the functions of focus adverbs (*adverbios focalizadores*), and more particularly, of focus identification adverbs (*adverbios focalizadores identificativos*), trying not to neglect either the cognitive (semantic) or functional dimensions in the analysis.

The paper is divided into three sections. First, the semantic types of focus are defined according to what has been established in the grammatical tradition. Second, some fundamentals of the cognitive-pragmatic approach are briefly summarized. From a pragmatic view, we consider focus adverbs not only as devices of textual metadiscourse but also, and mainly, as devices of interpersonal metadiscourse, which interact with other resources of the interpersonal dimension, building in certain occasions fields of adverbial attraction with other adverbs of epistemic or evidential kind (Müller 2007). In this sense, it is essential to consider Langacker's focus chain concept (1999, 2000), proving the dynamic character of conceptualizations, to which focus adverbs contribute in a fundamental way. Going beyond this cognitive approach, we suggest that focus adverbs would play a relevant role, from a neurocognitive point of view, as reinforcements of "sememic nections" (Lamb 1999).

In the final section, we present the results of a research applied to a corpus of oral texts: guided conversations and academic lectures.

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[1] All the quote translations are ours.

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1. SEMANTIC TYPES OF FOCUS ADVERBS. From a syntactic and semantic point of view, focus adverbs have been classified into "exclusive restricted adverbs" (*adverbios restrictivos exclusivos*), "marker adverbs" (*adverbios particularizadores*) (Quirk et al. 1985: § 8.116; in Kovacci 1999: 773) and "identification adverbs" (*adverbios identificativos*) (Nøjgaard 1993: §§ 370, 372; in Kovacci 1999: 773).

The exclusive adverbs are "negative quantifiers" and "help to build the feature of exhaustive list, proper of this type of focalization, because they exclude the other members of the semantic paradigm to which belong the affected member" (Kovacci 1999: 773). To this sort belong, among others, the adverbs *solamente, únicamente, exclusivamente, puramente, simplemente, meramente*.

The marker adverbs, such as *particularmente, especialmente, específicamente, principalmente* and locutions like *en particular* and *sobre todo*, "show the predominance of the focused element", canceling in this way "the feature of exhaustive list of the information contained in the focus" (Kovacci 1999: 775-776). This is why the other members of the universe are not excluded. It must be pointed out that these adverbs cannot be omitted because, if so, the truth value of the text is modified.

Finally, *identification adverbs*, like *exactamente*, *justamente*, *justo*, *precisamente*, that constitute the proper object of our study, share the general features of focus adverbs but, unlike the marker adverbs, they can be omitted and their function is of reinforcement (Kovacci 1999: 777). In the next section we will see how, from a cognitive perspective, these labels assigned to the different sorts of focus adverbs identify the three basic conceptual archetypes that organize the category.

As regards *identification adverbs*, there is a relevant grammatical distinction that assigns two kinds of value to these adverbs: "relational" and "connective". The adverbs *precisamente*, *justamente*, *justo*, y *mismo* acquire relational value when "they head an argument, generally in thematic position, and by means of a paraphrase" (Kovacci 1999: 778) or by resuming the same term. It can be noted that in (1) the adverb *justamente* occupies a highlighted position, it accompanies the focus constituent in the cleft sentence, and the noun focalized by the adverb is preceded by an anaphoric deictic (the demonstrative pronoun *esta*):

(1) Pero tengo *la firme impresión* de que la literatura ha demostrado ser, en los últimos años, una disciplina imperialista que pretende explicar la obra literaria prescindiendo completamente de su extratextualidad […]. Y es ***justamente*** *esta impresión* la que me interesa exponer aquí y someterla al juicio de su propia experiencia. (L-3)[2]

I have the strong feeling that literature has proved to be, in the last years, an imperialist discipline that tries to explain literary work disregarding its extratextuality […]. And it is just this impression that I am interested in presenting here […]. (L-3)

The same adverbs function as connective adverbs, more precisely, as adverbs of continuation or digression, when they "identify the previous context, monologue or dialogue, as the topic of the member they head", which can be "oriented to specification or contradiction with respect to the topic" (Kovacci 1999: 771). This can be appreciated in the following case, where the adverb precedes the object ("*dos o tres opiniones*") that confirms what has been said by the interlocutor, followed by the anaphoric complement that refers to the topic ("*respecto a esto*"):

(2) Informant - […] la administración pública evidentemente absorbe los economistas. Decir que no tienen porvenir porque no ganan lo que tienen que ganar en Francia es otro aspecto, pero la posibilidad de trabajar en eso la tienen. Estarán muy inferiormente remunerados quizá. //… //
Interviewer -Sí. Yo he recogido ***justamente*** dos o tres opiniones respecto a esto, ¿no? (D-2)

Inf. - […] public administration evidently absorbs economists. Saying that they have no future because they do not earn what they would earn in France is another aspect, but they do have the possibility of working in that [field]. They much more poorly paid *quiza* […]
Interv. -Yes. I have just collected two or three opinions with respect to that. (D-2)

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[2] The letters L and D point out the origin of the examples, lectures or dialogues, respectively, and they are followed by the identification number they have in the corpus (see Appendix).

2. FOCUS IDENTIFICATION ADVERBS FROM A COGNITIVE-PRAGMATIC APPROACH. So far we have emphasized the incidental or peripheral role of focus identification adverbs and their cohesive function. If we concentrate now on the pragmatic perspective, in particular the one that studies *metadiscourse*, that is, "discourse about discourse" (van de Kopple 1985, cited in Hyland 1999:5), it is clear that identification adverbs are part of the repertoire of "textual metadiscourse" (Hyland 1999, 2000), as they play an active role, as cohesive elements, in the production and organization of the text (Stubbs 1983, Hyland 1999).

An aspect that has been somehow neglected is the value of these adverbs as interpersonal lexemes concerned with identifying and emphasising a relevant aspect or a certain thematic relation. In this sense, we could integrate them into the subcategory of emphatics (Hyland 1999) with other adverbs or locutions referring to modus or modality.

In fact, if we extend the context of analysis, we can observe that on certain occasions, this type of adverb may establish a strong relation with other expressions or adverbs of epistemic and evidential nature, and even with other kinds of interpersonal metadiscourse devices, as "person markers" (performative verbs of speech and opinion) or "relational markers" (*recuérdese*, *imaginemos*, *consideremos*, etc.) (cfr. Hyland 1999: 7). See, for example, (3)[3]:

(3) Además, ***sigo creyendo*** que en los detalles se puede asomar una idea aproximada del todo y por eso ***cito*** un eco-poema donde ***claramente*** la naturaleza no es solo tema sino materia misma de la función poética para **justamente** propiciar una red de conversación entre mundos paralelos y separados[4].

Besides, I still believe that it is in details where you can find an approximate idea of the whole and, for this reason, I quote an eco-poem where, clearly, nature is not only the theme but also the very matter of the poetic function just for encouraging a conversational net among parallel and separate worlds.

First, we can appreciate the presence of performative speech acts (*sigo creyendo*, *cito*) which point to the person of the speaker and show his/her concern about emphasizing the permanent character of his/her convictions and about quoting the source of evidence. But also we can observe other interpersonal metadiscourse devices: the evidential adverb *claramente* that reinforces the certainty of the interpretation, and the identification focus adverb *justamente*, that highlights a relevant aspect of this interpretation. It is easy to notice the interrelation among all these elements that join together in order to validate the argumentation; in particular, the close connection established among the adverbs defines a field of adverbial attraction (Müller 2007). Indeed, the study of the metadiscourse functions performed by adverbs of epistemic modality and evidentiality in a corpus of research articles and academic lectures, revealed that in certain parts of a discourse of great argumentative density, the epistemic adverb (*ciertamente, realmente*) or evidential adverb *(evidentemente, claramente, naturalmente*) establish a communicative strategic relationship with another epistemic or evidential adverb, or with a focus adverb (*justamente*, *precisamente*, *fundamentalmente*, *sobre todo*).

To name this phenomenon we borrowed a term from the field of Physics, considering that one of the adverbs functions as a nucleus or center of an argumentative interaction with another satellite adverb, located in a nearby or more distant discourse orbit. This interaction can be the answer to an intrinsic or extrinsic motivation. In (3), the relation between the nucleus adverb (*claramente*) and its satellite (*justamente*) results from an intrinsic motivation, that is, a motivation inherent to the textual fabric of the argument. Otherwise, it may happen that the adverbial interactions are the answer to an implicit requirement on behalf of the audience of an academic lecture. In this last case we are talking about an extrinsic motivation.

However, according to the approach adopted in this work, the study of the communicative aspects connected with the use of a certain focus adverb is interesting, as long as those aspects tell us something about the organization of our cognitive structures and the way they work. Indeed, the analysis of any linguistic phenomenon from this approach is based on the idea that we should pay attention to both, the functional and cognitive dimensions "simultaneously in an integrated way" (Kecskes 2004; cited in Nuyts 2004: 135) because, although they are connected with different aspects, both dimensions are "equally inherent" to language (Nuyts 2004: 135).

The functional dimension, as Nuyts (2004: 135-136) explains, refers to the "operational side" of the language, directly accessible because it takes part of the "externalized behavior". On the other hand, the cognitive dimension represents its infrastructural side, as a biological system with its own format and operations, permanently and actively related to other cognitive systems. A fundamental principle is that no one can have access to the cognitive-semantic facet without watching the communicative actions.

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[3] This paragraph has been extracted from the following research article: Forns-Broggi, Roberto. 2004. El eco-poema de Juan L. Ortiz. *Anales de Literatura Hispanoamericana*, 33: 33-48.

In this sense, the premise of this paper is that the interactions among metadiscourse elements and, in particular, the fields of adverbial attraction in which a focus adverb appears, are evidence in favor of the dynamism of conceptualizations that can be explained by the focus chain concept (Langacker 1999, 2000), to which we refer in section 2.1.

2.1. FOCUS CHAIN AS A COGNITIVE FOUNDATION FOR AN EXPLANATION OF FOCUS ADVERB FUNCTIONS. By the term "focus chain" or the so called "chain of reference point," Langacker (1999: 42) characterizes the conceptual structures, emphasizing their dynamic character; that is to say, the fact that "they emerge and develop during a processing time." The conception of a complex structure implies a need to follow "numerous natural paths (cognitively natural orderings of elements), which may or may not coalign". As shown in **Figure 1**, "a natural path often consists of a chain of *foci*, with each focus, Fi, evoking a *context*, Ci, in which the next focus can be found" (Langacker 1999: 42):

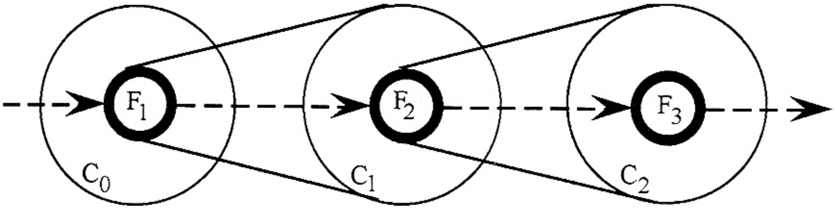

**Figure 1:** Focus chain (Langacker 1999)

Examples such as (3), of strong argumentative weight where the presence of the author is highlighted through a set of metadiscourse marks, can be considered as complex structures that may be represented by a focus chain in which each interpersonal metadiscourse device introduces a new discourse focus, which in turn activates the necessary context for interpreting the next segment. If we concentrate our attention on one of the links of this chain, particularly on an identification focus adverb, like *justamente*, which precedes or gives entrance to the focus in an established conceptual domain, it is possible to assume that since an adverb of this kind appears in discourse, we are facing a typical case of a focus chain or an organization with a reference point, very similar to the one that takes place in anaphoric relations of antecedent pronouns. In fact, in the immediate context of this type of focus adverb we can find anaphoric deictics, like *por eso*, *respecto a esto*. This possibility of invoking points of reference for the conceptualization of other entities is a basic cognitive ability, persistent in and common to several linguistic phenomena and everyday experiences. Note that every cognitive ability matches a conceptual archetype through which it is manifested and which defines its prototype; thus it is important to identify the particular relation that takes place here between ability and archetype, in order to characterize these types of constructions with focus adverbs. Therefore, the general category of focus adverbs is organized on the basis of three basic conceptual archetypes: selection and exclusion, identification, and particularization, which obviously coincide with the labels given by grammatical descriptions.

At the beginning of this paper we suggested the possibility of going beyond this cognitive-semantic approach. In fact, if we explore some of the previous notions, we find that they could have certain neurocognitive plausibility. In section 2.2, some paths in this direction are proposed.

2.2. TWO HYPOTHESES WITH NEUROCOGNITIVE PLAUSIBILITY. In this section we propose two hypotheses. The first one has a more generic nature, and the second is specific to the phenomenon of field adverbial attraction.

2.2.1. FIRST HYPOTHESIS. From a neurocognitive perspective we can assume that focus identification adverbs would have a fundamental role as reinforcements of sememic nections, since they highlight certain aspects of texts that are relevant in some way to the speaker/writer and which should be considered by the receiver. In the case of oral communicative interactions, it may happen that the interlocutor establishes these sememic nections because of personal interests or motivations. To speak about the focalization of a certain aspect or idea necessarily implies its visualization. This means that not only the sememic conceptual subsystems are activated, but also the visual perceptive.

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2.2.2. SECOND HYPOTHESIS: The concept of field adverbial attraction may also be explained in neurocognitive terms. All the adverbs involved – the epistemic/evidential adverbs (*claramente*, *evidentemente*) and the focus adverbs (*justamente*, *exactamente*) – would be integrated into the same conceptual network. As regards these adverbs, it is obvious that we are not dealing with concepts referring to concrete objects but with relational concepts, in the sense that they modify certain entities or events. Without intending to extend the following remarks to other fields of adverbial attraction, we shall try to identify the sememic nections between the adverbs of the field exemplified in (3) (*claramente – justamente*) and those established in the following field between *evidentemente* and *justamente*, on one hand, and between *evidentemente* and *exactamente*, on the other (4):

(4) *Interv.* - Claro, pero hay gente que hace algo en una ciencia que implica una revolución--- en... en el carácter de la ciencia, ¿no? Ahora no sé si es por suerte o si--- ***justamente***... eh...
*Inf.* -No, **evidentemente** siempre hay un toque, podríamos llamarlo genial, si se quiere.
*Interv.*- Eso, ***exactamente***; se puede... (D-6).

*Interv.* – Right, but there are people who do something in a certain science that implies a revolution, but I don't know if it is luck or *just…*
*Inf.* – No, evidently there is always a touch, we could call it a genial touch, if you want.
*Enc.* – That is, exactly, it can be… (D-6).

Both *claramente* and *evidentemente* are evidential adverbs formed with adjectival bases which evoke concepts that are directly related to perceptual visual modalities. Indeed, the first definition of *claro* in the Dictionnary of the Royal Spanish Academy (DRAE) is "bañado de luz" (*bathed in light*). On the other hand, the adjective *evidente*, built upon the Latin verb *video* 'I see', refers to what is obvious for the eyes of the intellect; it is defined as *claro, cierto, patente y sin la menor duda* 'clear, certain, and without the least doubt' in DRAE. We could state that both adverbs share the same sememic structure with lexemic nections or ideonections at one extreme and perceptual nections at the other (cf. Lamb 1999: ch.9). The question is how adverbs like *justamente* or *exactamente* are connected to this network. It is clear that their function in these cases is to point out, identify or focus on a particular aspect of an entity, idea or thought which is evident and can be appreciated with entire clarity. Therefore, we do not have the conceptual nections of 'justice' and 'exactness' here, which have more strength. What we have are the perceptual nections which let these adverbs be classified as focus adverbs. Thus, we could propose that in these cases of adverbial attraction the adverbs *justamente* and *exactamente* are not automatically connected directly with perceptual nections but only when these sorts of nections have been activated by the adverbs *claramente* and *evidentemente*. Nevertheless, even in cases where the focus identification adverbs are alone, not depending on evidential adverbs, they seem to induce effects of visualization directly. This could be explained by the very fact that identification adverbs are intuitively categorized as *focus* adverbs, that is, they are connected with the conceptual and perceptual nections of 'focus' conceived as a light directed to a stage or point.

## 3. ANALYSIS OF A CORPUS OF TEXTS.

3.1. CORPUS AND SUBJECT OF STUDY. Following the epistemological principle of the priority of the communicative approach, we analyzed a corpus of two text-types, related by their use the oral medium of transmission, but different in their verbalization (cf. Oesterreicher 1996, 2002). The corpus is made up of ten academic plenary conferences from two different research areas (Theory and Literary Criticism and Economy and Public Finances) and ten dialogues taken from the Corpus of Cultured Speech of Buenos Aires City.

The research is divided into two stages. In the first exploratory instance, the frequency of the different types of focus adverbs in both corpora was determined and the relevant data were interpreted. As a result of this task, which reveals an interesting situation for the case of identification focus adverbs, and in particular, of the adverb *justamente*, we have decided to restrict the object of study to this adverb, trying to strike a balance between the cognitive and functional points of view.

3.2. RESULTS AND DISCUSSION. **Tables 1** and **2** allow us to visualize and compare, in numerical terms, the situation of identification adverbs with respect to the other focus adverbs in each corpus. **Table 2** also shows the number of adverbs that belong to each discipline in the corpus of academic conferences. The following conclusions are derived from the results:

a) Although the variety of adverbs that belong to the identification adverb type is rather small, these adverbs represent a quite frequently in both discourse types, even more than exclusive adverbs;

b) A bigger balance can be noted in relation to the distribution of the total number of cases in the corpus of academic conferences, with a slight difference in favor of marker adverbs, which represents 41.38% of the total. On the contrary, in the dialogues, the distribution is noticeably irregular and identification adverbs constitute the majority, with 54.79% of the cases; and

c) There are more identification adverbs in the corpus of dialogues than in that of conferences (54.79% vs. 35.63%, respectively). This fact and the greater presence of this type of adverb in the dialogues may have application to a typological classification of texts.

**Table 1:** Focus adverbs in dialogues

| **Exclusive** | | **Identification** | | **Particularizers** | |
|---|---|---|---|---|---|
| Adverbs | Quantity | Adverbs | Quantity | Adverbs | Quantity |
| *simplemente* | 6/73<br>(8.22%) | *justamente* | 22/73<br>(30.14%) | *sobre todo* | 7/73<br>(9.59%) |
| *prácticamente* | 3/73<br>(4.11%) | *precisamente* | 4/73<br>(5.48%) | *fundamentalmente* | 9/73<br>(12.33%) |
| *puramente* | 1/73<br>(1.37%) | *exactamente* | 12/73<br>(16.44%) | *básicamente* | 3/73<br>(4.11%) |
| | | *justo* | 2/73<br>(2.74%) | *especialmente* | 3/73<br>(4.11%) |
| | | | | *específicamente* | 1/73<br>(1.37%) |
| Total | 10/73<br>(13.70%) | | 40/73<br>(54.79%) | | 23/73<br>(31.51%) |

If we now pay attention to the identification adverbs and, in particular, to *justamente*, the following statements may be derived: a) In the corpus of dialogues, the adverb *justamente* not only is the most frequent of the set of focus adverbs, with 30.14% (**Table1**), but also of its own set of identification adverbs, with 55% (**Table 3**); and b) In the corpus of conferences, instead, the situation of the adverb *justamente* is quite the opposite: the only five cases found are in the Theory and Literary Research discipline (**Table 3**).

Although we can find some examples of *justamente* in the corpus of lectures, it is worth noting that the only five cases found are part of an academic conference in which there is an approach between "medium" and "conception" or "way of verbalization"[5]. Indeed, this conference emerges as an answer to an immediate or quasi-immediate stimulus from the situational and cognitive context (the speech of another speaker) and, for this reason, a series of "parameters or communication conditions" that determine the appearance of certain "verbalization strategies" proper to "oral conception" can be identified. Among these conditions, we can mention "[being] strongly rooted in the communicative action and situation," a "noticeable dialogic character," "great spontaneity," and a relative "freedom in the selection of the subject," which motivate the production of a discourse characterized by its "poor planning," its "ephemeral character," and an "additive syntax" (Koch & Oesterreicher 2007: 25-35). In the second phase of the research, as already mentioned, a group of cases are analyzed according to the following objectives: a) To identify the communicative acts implied in the use of this focus adverb; b) To observe whether the elements of the initial focus (focus 1) pertain to the same cognitive domain as the elements of focus 2; and c) To discuss, on the basis of some examples, the issue of prototypicality with regard to the focus adverb *justamente* along with some neurocognitive implications.

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[5] According to Wulf Oesterreicher (1996: 318), it is necessary to establish a distinction between the *medium* in which a textual statement can be manifested (phonic or graphic) and its *conception* or way of verbalization. This level of conception constitutes a "gradation", "scale" or "continuum limited by two extremes that could be called *communicative immediacy* and *distance*".

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**Table 2:** Focus adverbs in academic lectures

| **Exclusive** | | | **Identification** | | | **Particularizers** | | |
|---|---|---|---|---|---|---|---|---|
| Adverbs | Lit. | Ec. | Adverbs | Lit. | Ec. | Adverbs | Lit. | Ec. |
| *simplemente* | 0 | 2/87 (2.30%) | *justamente* | 5/87 (5.75%) | 0 | *fundamentalmente* | 4/87 (4.60%) | 2/87 (2.30%) |
| *prácticamente* | 0 | 4/87 (4.60%) | *precisamente* | 6/87 (6.90%) | 6/87 (6.90%) | *básicamente* | 1/87 (1.15%) | 16/87 (18.39%) |
| *puramente* | 1/87 (1.15%) | 5/87 (5.75%) | *exactamente* | 2/87 (2.30%) | 12/87 (13.79%) | *particularmente* | 0 | 2/87 (2.30%) |
| *exclusivamente* | 0 | 2/87 (2.30%) | *justo* | 0 | 0 | *solamente* | 0 | 1/87 (1.15%) |
| *solamente* | 1/87 (1.15%) | 2/87 (2.30%) | | | | *especialmente* | 0 | 1/87 (1.15%) |
| *meramente* | 1/87 (1.15%) | 0 | | | | *en especial* | 0 | 1/87 (1.15%) |
| *sencillamente* | 2/87 (2.30%) | 0 | | | | *sobre todo* | 8/87 (9.20%) | 0 |
| Totales parciales | 5/87 (5.75%) | 15/87 17.24%) | | 13/87 (14.94%) | 18/87 (20.69%) | Totales parciales | 13/87 (14.94%) | 23/87 (26.44%) |
| Totales finales | 20/87 (23 %) | | | 31/87 (35.63%) | | | 36/87 (41.38%) | |

| **Identification Adverbs** | **Dialogues** | **Academic lectures** |
|---|---|---|
| *justamente* | 22/40 (55%) | 5/31 (16.13%) |
| *precisamente* | 4/40 (10%) | 12/31(38.75%) |
| *exactamente* | 12/40 (30%) | 14/31(45.16%) |
| *justo* | 2/40 (5%) | 0 |
| Total | 40 (100%) | 31 (100%) |

**Table 3:** Focus identification adverbs in dialogues and academic lectures

We begin with the communicative acts associated with the use of *justamente.* We observe acts of explanation or justification in those contexts in which the adverb focalizes an element that is the object of a subjective evaluation or a personal reflection. These acts are precisely motivated by the need of the speaker to give a justification to his/her position or point of view. They can be clearly identified by the explicit presence of causal (*porque*, *puesto que*) or reformulation connectors (*es decir*). In addition, they can be reinforced by adverbs of epistemic or evidential modality, as in (5):

(5) *Inf.* – […] a mí me... me interesa la música como como arte y no... no tanto la parte de sí se... sensitiva, sino la... la... la parte técnica.//… //
*Inf.* -Sí, no no. Piazzola sí me gusta. Bueno, ***justamente*** Piazzola *porque* hace *realmente* música… (D-1)

*Inf.* – […] I am interested in music as art and not so much its sensitive part, but its technical part. //… //
*Inf.* – Yes, no, no. Piazzola, I do like him. Well, especially Piazzola because he really plays music... (D-1)

Of course these explanatory or justifying acts are connected with the development of different topics in one or another type of discourse. In the case of dialogues, they take place when the speaker refers to personal topics such as feelings or personal preferences or experiences, whereas in academic lectures, they occur when formulating the interpretation of theoretical questions or topics and ideas conceived throughout a research line, as in (6). But it should be noted that in both discourse types, the communicative acts of explanation or justification are linked with the subjectivity of the speaker: with his/her affects, emotions and personal opinions about a particular subject.

(6) […] ¿cómo, hasta dónde, el discurso hegemónico a través de focos de resistencia permite la transgresión […]? […] el problema tal como ahora lo estoy planteando es un problema que me ocupa desde hace años, *puesto que* mi visión ***justamente*** de la Inquisición, de la historia del Imperio Español a partir de estas parodias de textos […]. (C-3)

[…] how and how far the hegemonic discourse, through its own resistence focuses, allows transgression […]? […] the problem I am faced with is a problem I have been dealing for a long time, since just my view of the Inquisition, of the history of the Spanish Empire from these textual parodies […]. (C -3)

Another communicative act, a composition textual act, highlighted by the focus adverb *justamente*, is marking out the subject to be developed, which can be found in both types of discourse. Given the fact that the focus adverb appears immediately before the subject that is announced or marked out and that it can even be highlighted by a cleft sentence, we could speak in these cases of structural iconicity (Virtanen 2004), in the sense that the adverb marks the opening of a textual section. See, for example, (7):

(7) Y es ***justamente*** esta impresión la que me interesa exponer aquí […]. (C-3)

And it is just this impression that I am interested to present here […]. (C-3)

In response to the second objective, the study of the cases reveals that the links of the focus chain can be part of the same cognitive domain, as in (8), or constitute two different domains or "mental spaces" (Fauconnier 1994; Sweetser & Fauconnier 1996), as in (9).

(8) […] todo el progreso de la razón […], parte ya de una visión anterior, […] sobre todo viéndolo desde la historia de las mentalidades, cómo se establece una mentalidad de la unidad del ser, de la unidad de la

razón […] y *dentro de esa unidad* ***justamente*** *la necesidad de entrar en ella* porque si no se entra en ella se queda excluido. (C-1)

[...] all the progress of reason [...], starts from a previous vision, [...] especially if it is seen from the history of mentalities, how the mentality of a being's unity is established, of the reason's unity [...] and within this unity, the necessity of just getting into it because if you do not get into it you are excluded. (C-1)

(9) *Inf.* – [...] no puedo juzgarla [a la Universidad privada] porque en realidad no conozco, ¿no? *Ahora* esté... ***justamente*** *el otro día* estaba hablando con un colega […] y me dijo que el nivel de exigencia era bastante interesante… (D-1)

*Inf.* – […] I can´ t judge it [the private university] because, actually, I don´ t know. Now, just the other day I was talking with a colleague who […] and he told me that the level of demands was quite interesting ... (D-1)

As opposed to what happens in (8), the identification adverb in (9) focalizes the entrance to a new cognitive domain or space. The opening up to a new space can be identified from certain contextual signals, such as the verbal morphemes indicating time, or may be signaled by temporal constructions like *el otro día* 'the other day', *hoy* 'today', *desde hace años* 'since long ago'. Moreover, connectors that anticipate the breakdown of the space created may also appear in the context of the utterance, as is the case of *ahora* 'now' with the value of *pero* 'but' in (9). Two basic questions arise when we consider this opening up to a new cognitive space: a) What is the nature of the new space? and b) What is the motivation for this opening to occur? If we observe the particular case of (9), we see that the new space evokes a communicative situation in which the speaker plays the leading role and which is stored in his/her episodic memory. This situation allows him/her to express an opinion with justification about the theme. The motivation would be then the need to express this opinion, to engage with a certain point of view. It would also be the case that the second space identifies with the here and now of the speaker, in order to highlight a particular state or property of him/herself. Thus, in the next example (10), cognitive domain 1 is made up by a permanent property or quality of the speaker, and cognitive domain 2, by a temporary or eventual property. Here the motivation for the opening of the second space is the fact that the speaker's favorite team has lost a game:

(10) *Inf.* -Soy simpatizante de San Lorenzo. *Hoy* ***justamente*** *estoy muy amargado* porque termino de escuchar el partido. Perdieron. (D-1)

*Inf.* -I am a San Lorenzo sympathizer. Today in particular I feel bitter because I have just finished listening to the match. They lost. (D-1)

Finally, the last purpose of the present research is to examine some examples of the adverb *justamente* in connection with the theory of prototypes from a neurocognitive point of view (Lamb 1999). By analyzing the adverb *justamente* in its real contexts of use, we see cases such as the following, in which the speaker hesitates about the selection of the right adverb. Thus, the place of *justamente* may be occupied by an adverb of the same category of identification adverbs, like *específicamente* in (11), or by an adverb of a different category, even other than focus adverbs, like the peripheral modal adverb *francamente* in (12).

(11) *Inf.* -Aunque no se hayan leído se publican en las actas del congreso. Ellos le dicen **específicamente** ellos, ***justamente***, que muchos trabajos no son aceptados en el congreso para leer porque, por ejemplo, el tema eh... se toma el tema central en los congresos; entonces no encuadra dentro de ningún tema central del congreso… (D-6)

*Inf.* – Although [those papers] haven not been read, they are published in the Conference Proceedings. They tell them, specifically they, that many works are just not allowed to be read because, for example, the subject, the central subject is taken; they [the papers] are outside the main subject of the conference… (D-6)

(12) *Inf.* -Sí, ahí s... ahí es un poco también... eh... la parte de de renunciamiento; primero, de mi señora porque también esté tenía las mismas condiciones [para las artes plásticas], ¿no? **Francamente** esté… ***Justamente*** [de] todas las... eh... compañeras… y todo era una de las que tenía más condiciones… (D-9)

> *Inf.* – Yes, here is the question of renunciation; first, from my wife because she had too the same conditions [for painting]. Frankly… Just she of all her partners was the one that had more conditions... (D-9)

These hesitations show the possibility of an overlapping of functions and therefore, the possible existence of a gradual transition from one category to another. What is relevant here is the communicative intention of the speaker. In (11), he looks for accuracy, so he employs the form *específicamente*. However, the selection of the first adverb does not seem to him convincing enough and he prefers the second adverb (*justamente*) instead. This adds a particular nuance of emphasis. In (12), the speaker is interested in enhancing the talent of his wife as an artist. This context of strong subjectivity and sensitivity makes him choose the adverb of illocution *francamente*, but then he opts for *justamente* in order to point out how good she was. To conclude, we could say that certain contexts, like that of (11), activate more central nections (the property of accuracy, for example) of the adverb *justamente* and other contexts, related with motivational or affective factors, like (12), activate more peripheral nections (sincerity, affectivity) of this adverb.

4. FINAL REMARKS. The main objective of this paper is to analyze focus identification adverbs and, particularly, the adverb *justamente* from a cognitive-pragmatic approach. The study of the functional dimension let us appreciate the main function of this adverb as an interpersonal metadiscourse device with emphatic value. In fact, both in dialogues and in lectures, it takes part in communicative acts of explanation or justification in contexts of marked subjectivity and dialogic character, so it is nearer the “communicative immediacy” end (Koch & Oesterreicher 2007). We can also observe its close relationship with other devices of interpersonal metadiscourse and, especially, with other adverbs of epistemic and evidential nature, giving rise to what we have called “fields of adverbial attraction” (Müller 2007).

From a cognitive point of view, these findings seem to support the hypothesis of the dynamic character of the conceptualization of “complex structures” (Langacker 1999), where this sort of device functions as ‘motive’ or as a focus element. Thus, every segment in which the adverb *justamente* appears may be considered as an instance of a focus chain. In the analysis of these instances, we tried to explain certain phenomena concerning the kind of connection between the cognitive domains (i.e., whether an opening to a new cognitive space appears) and the possibility of overlapping among adverbial categories.

Finally, we suggest the neurocognitive plausibility (cf. Lamb 1999) of the concepts field of adverbial attraction and focus chain. Specifically, our proposal is that focus identification adverbs induce effects of visualization and, therefore, they play an important role as reinforcements of sememic or conceptual nections.

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## Appendix

### Corpus of dialogues

Dialogues 1-10 (p. 13-163) extracted from *El habla culta de la ciudad de Buenos Aires. Materiales para su estudio*. 1987. Tomo 1. Universidad de Buenos Aires. Facultad de Filosofía y Letras. Instituto de Filología y Literaturas Hispánicas "Dr. Amado Alonso". Directora: Ana María Barrenechea.

### Corpus of lectures on Theory and Literary Criticism

Lectures delivered at the "II Encuentro sobre Teorías y Prácticas Críticas". Facultad de Filosofía y Letras, Universidad Nacional de Cuyo, 1995:

1. Reisz, Susana: *Colectivismo versus universalismo. Voces e imágenes de mujer en la literatura de este fin de siglo*.
2. Mignolo, Walter: *Mapas lingüísticos y geografías culturales, lugares de enunciación, construcciones imaginarias y prácticas teóricas postcoloniales*.
3. Gómez Moriana: *La recepción del racionalismo cartesiano en América Latina*.

Lectures delivered at the "III Encuentro sobre Teorías y Prácticas Críticas". Facultad de Filosofía y Letras, Universidad Nacional de Cuyo, 1997:

4. Anderson Imbert, Enrique: *Mi formación como crítico literario*.
5. Caballé, Ana: *Mitos y realidades de la crítica literaria*.

### Corpus of lectures on Economy and Public Finances

6. Arriazu, Ricardo: *El sistema financiero en la coyuntura económica actual*. Jornadas de Ciencias Económicas 1992. 13-15/ 04/ 1992. Tema del panel: "La función de la banca en la coyuntura económica actual".
7. Sturzenegger, Adolfo: *Apertura de la economía y crecimiento*. Encuentro Económico Empresarial sobre Apertura e Integración. 17/ 09/ 1991.

Lectures delivered at the "Sexta Convención de ADEBA (Asociación de Bancos Argentinos): "Reforma fiscal y crecimiento económico". 29-31/08/1988.

8. López Murphy, Ricardo: *Crecimiento económico, políticas públicas y reforma fiscal*: *Presentación de la problemática*.
9. Zorgno, Roberto Juan: *El problema del ahorro para la vejez o la seguridad social, y el problema de la promoción y coparticipación federal*.
10. Ávila, Jorge César: *La incertidumbre y su efecto sobre los precios relativos*.

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# TRACE FOSSILS, THEIR LINGUISTIC ANALOGUES, JUST IN TIME

Robert Orr

**Abstract:** Purely linguistic data (place-names, etc.) can contribute to reconstructing the natural world and lost landscapes. This article cites examples contributing to the reconstruction of sea-levels and volcanoes, the presence or absence of wildlife, the speed of extinction processes, or even vanished towns.

Such linguistic phenomena are paralleled in evolutionary biology by the phenomenon of trace fossils, marks like footprints or scratchmarks, left by various prehistoric life-forms. In fact, for a long time one fossil animal, the *Chirotherium*, was known only from footprints. Meanwhile, a common topic of discussion in linguistics is the current alarming rate of language loss, including many of the forms to be discussed here, which were preserved in the nick of time by fieldworkers and researchers. Among these are Ahlqvist's examples on known Finno-Ugric elements denoting rivers and lakes in certain toponyms in Central Russia, including six bog and meadow names north of Moscow, and the preservation of oronyms on Rhum.

Examples of trace fossils actually seem to be more common in linguistics in the broadest sense than in biology, and this paper will propose that evolutionary biologists might be a little bolder in using them.

**Keywords:** toponyms, oronyms, historical linguistics

**Languages**: Avestan, Breton, Common Celtic, Common Slavic, Cornish, Dyiribal, East Slavic, English, Finno-Ugric, French, Gaelic, German, Greek, Hittite, Indo-European, Irish, Lithuanian, Mari, Merya, Old English, Old Irish, Old Norse, Pelasgian, Polish, Proto-Indo-European, Russian, Slavic, South Slavic, Tematisch, Welsh, Yura Ngawarla,

> "Philology can capture what is poetic in the patrimony of vanished peoples and cultures, without the legerdemain of 'poetics', which tends to snuff out the poetry of its object". (Puhvel 2003:349)

THIS ARTICLE TAKES THIS SHORT BUT IMPORTANT REMARK by Puhvel as its starting point. He suggests that forested green hillsides may be reconstructed in Anatolia, based on Hittite data. Recently Ahlqvist (2006) has produced a pioneering study along the same lines, richly illustrated with examples of how purely linguistic data (place-names, etc.) can contribute to reconstructing the natural world and lost landscapes, in this case, the existence of now-vanished lakes. Ever since linguistic reconstruction emerged as a scholarly pursuit there have been attempts to use its results to reconstruct aspects of the real,

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everyday, world of the actual speakers of the respective reconstructed languages or protolanguages.[1] More recently, a growing corpus of material, more ambitious in its scope, is emerging on an ongoing basis, showing how comparative linguistics, especially as applied to purely linguistic data preserved in nonlinguistic contexts (e.g., place-names, etc.) can contribute to interdisciplinary studies involving the tentative reconstruction of the natural and man-made world, e.g., vanished lakes (Ahlqvist 2006); sea-levels, volcanoes (Sharpe & Tunbridge 1997), towns (Casely 2007), extinct animals (Drummond 1991, Sharpe & Tunbridge 1997), etc.

The epigraph to this article is part of the conclusion to a discussion of an at first sight less obvious example thereof, from Hittite poetry, provided by Puhvel (2003:349), in a recent seminal, albeit all too brief, article. He cites the phrase *DUTU AN-E lahhurnuzziēs appanzi* 'greensward grips the sun of heaven', which he sees as evoking an "image [of] sunset before ecological disaster denuded the forested green hillsides of Anatolia".

This article will enumerate and discuss similar examples, and it will argue that they may be linked to the phenomenon in paleontology and evolutionary biology dubbed "trace fossils" by, e.g., Conway Morris in his glossary (1999: xxiii, 30, 33, 37n., 90, 96, 113n., especially 141, 144, 158–59, 161, 163, 165n.; see also below) and some illustrations (Figures 65, 69, 70)), after the marks left by various prehistoric life-forms of any given period (footprints, scratch marks, etc.). Mainly based on his studies of the Cambrian Explosion (around 530 million years ago), he offers an exact, albeit somewhat narrow, definition of trace fossils in his glossary:

> "The remains of the activity of an animal, exemplified by the burrow of a worm or the walking trail of an arthropod. Trace fossils typically involve reworking of the sediment, and thus in normal circumstances of sedimentation they cannot be transported without being destroyed." (Conway Morris 1999:xxiii)

This phenomenon appears to have been utilised by palaeontologists to reconstruct important aspects of the respective life-forms in a way parallel to various forms of linguistic reconstruction. In fact, the items to be discussed will be described as "linguistic trace fossils," following and building on Conway Morris.

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[1] This trend first found expression in the *Wörter und Sachen* school named after the journal founded in 1909 by Rudolf Meringer and Wilhelm Meyer-Lübke (see also Schrader 1907, Malkiel 1993:26, 33–34, 60–63, 84, 164–65), who believed that etymologies should not be studied in isolation, but in close association with the respective artefacts and cultural concepts covered by their denotations and connotations, which would enable researchers to study linguistic data more effectively (for excellent examples, and the implications for general and historical linguistics, see Maher 1973), in order to reconstruct the culture of speakers of the respective reconstructed protolanguage. Many of the principles and theories of the *Wörter und Sachen* school have expanded beyond Indo-European studies (for an application to the reconstruction of Bantu, see Bostoen 2004), and been incorporated into modern historical linguistics.

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1. VANISHED LANDSCAPES. The concept of linguistic trace fossils may be expanded outside its conventional biological application to cover similar phenomena in the reconstruction of landscapes and climate.

1.1. GREENLAND AND VINLAND. The discussion begins with one of the best-known instances of naming in history: when Eric the Red sailed west from Iceland in 986 AD, he named the large landmass he found “Greenland”:

> “Land þat er kallat er Grœnland fannsk ok bygðisk af Íslandi. Eiríkr inn rauði hét maðr Breiðfirzkr, er fór út heðan þangat ok nam þar land er síðan er kallaðr Eiríksfjorðr. Hann gaf nafn landinu ok kallaði Grœnland, ok kvað menn þat myndu fýsa þangat farar, at landit ætti nafn gott.” (Gordon 1962:35).
>
> ‘The land called Greenland was discovered and settled by people from Iceland. There was a man called Eric the Red from Breiðfjorðr; he had travelled out to Greenland from Iceland, and there he had taken over land which has been called Eiríksfjorðr since. He gave the land a name and called it Greenland, and said that people would be encouraged to go there if the land had an attractive name.’ [translation by the author]

Gordon (1962:xxvi–xxvii) suggests that Eric was being ironic in selecting a name, but perhaps to Eric’s own eyes ‘Greenland’ represented a simple statement of fact at the time: Greenland was colonised from Iceland during the Medieval Warm Period (ca. 800–1300 AD), and was far more hospitable to Scandinavian-style agriculture and pasturage than it is now (see also Diamond 2005:218, 219, *passim*). This interpretation appears more in keeping with the laconic, straightforward style of the Old Icelandic sagas.

Further, as is well known, from Greenland the Vikings went on to a land they called ‘Vinland’, a name that may well also provide a small piece of evidence for the Medieval Warm Period; the element *vín* ‘wine’ probably refers to grapes.

> “Ek var genginn eigi miklu lengra en þó kann ek nokkur nýnæmi at segja: ek fann vínvið ok vínber.” [...] Ok gaf Leifr nafn landinu eptir landkostum ok kallaði Vínland (Gordon 1962:47).
>
> ‘“I did not go much further, but I can say something new: I found vines and grapes” [...] And Leifr gave the country a name from its qualities, and called it Vinland.’ [translation by the author]

On the other side of the Atlantic actual vineyards are documented for this period, far further north than now, e.g., the coastal zones of the Baltic (approx. 56°N), and, in England, Lancashire and Yorkshire (approx. 54°N). It may be assumed that this also held true in North America, and that the land the Vikings called Vinland was actually far closer to

Greenland than might be expected from today's climate patterns, see Fagan (2008:12), Plimer (2009:65).

The very names 'Greenland' and 'Vinland', therefore, may be used as a small pieces of evidence in the tremendously complicated reconstruction of the Medieval Warm Period. This degree of complexity is mentioned by Fagan (2000:xix) in his study of the Little Ice Age (ca. 1350–1850), which immediately followed the Medieval Warm Period: "I never expected to explore the esoteric byways of Hudson Bay Company history, European oil paintings, the North Atlantic oscillation, and Dutch sea defenses."

1.2. AUSTRALIA: CHANGING SEA-LEVELS, VOLCANOES, AND VEGETATION. Sharpe and Tunbridge (1997:347–351) cite mythological data from the Port Phillip Bay area near Melbourne pointing to traditions of flooding and changing sea-levels, confirmed by advances in geology and oceanography, and from the Atherton Tableland in Queensland pointing to volcanic activity and changes in vegetation.

1.3. CORNWALL: ST. MICHAEL'S MOUNT. St Michael's Mount, a tidal island off the coast of Cornwall, near Marazion, offers a narrower parallel to the very phenomenon cited in Puhvel (2003:349). Its Cornish name, *Karrek Loos y'n Koos* (*karrek loes y'n koes*) 'the grey rock in the wood' (lit. 'rock grey in-the wood'), may also point to a time before it was cut off from the mainland. Remains of trees can still be seen at low tides, and radiocarbon dating has revealed the existence of a previous hazel wood around 1700 BC. Medieval chroniclers also mention the presence of woods in the area stretching right out to St. Michael's Mount and beyond.[2]

1.4. CENTRAL RUSSIA: VANISHED LAKES AND RIVERS. Recently, in consultation with scholars in paleogeography and paleobotany, Ahlqvist (2006) has compiled a pioneering study, aimed at examining certain toponyms in Central Russia, mainly the area where Merya used to be spoken,[3] which appear to denote the sites of former lakes. Citing known Finno-Ugric (FU) elements denoting rivers and lakes (12–13), she lists six place-names north of Moscow which include these elements (20–41), most of which denote bogs (*Kromnica*, *Vožerka*, *Iž'eŕ*, *Semigradovo*, *Sumeŕ*), and one of which denotes a meadow (*Ošara*), and cites all sorts of pieces of evidence, mainly neighbouring toponyms, in support of the thesis that both sets actually denote former lakes:

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[2] For 1099, the chronicler John of Worcester places St. Michael's Mount five or six miles from the sea, enclosed in a thick wood, and states that in November the sea flooded, causing much havoc; the Anglo-Saxon Chronicle records under the date 11 November 1199, "The sea-flood sprung up to such a height, and did so much harm, as no man remembered that it ever did before". The Cornish legend of Lyonesse, an ancient kingdom said to have extended from Penwith toward the Isles of Scilly, also talks of land being inundated by the sea.

[3] Merya, an extinct Finno-Ugric language, little-known apart from a few possibly identified lexical and toponymic items, was spoken in an area now including the modern Russian cities of Rostov, Kostroma, Yaroslavl and Vladimir, located north-east of Moscow. It probably became extinct during the Middle Ages around 1000 AD, as the Merya were assimilated by the Slavs. Merya forms can often be hypothesised through Mari, see below.

(1) *Kromnica* (2006:24–26; also *krómnickoe* with more specific reference to the bog) refers both to a bog and a village in the Jaroslavl’ area, with the former referring to a now-vanished lake. Ahlqvist derives it ultimately from FU **jaxro-/*jagro-* containing the element **Xr*(V)-/**Kr*(V)-/**Gr*(V)- ‘lake’ (see Ahlqvist 2006 14–20 for more detailed discussion) > *Jaxroma* > *Xroma* > **Kroma* > *Kromnica*. *Kromnica* provides an apparent example of folk etymology, it may be derived from an FU form **Jaxroma* (24 fn. 23), with *Krom-* < *Xrom-* based on an apparent association with Russian крома/кромка ‘edge’.[4]

(2) (*V*)*ožerka*[5] (2006:26–29) denotes a boggy river valley, also in the Jaroslavl’ area. Ahlqvist derives it from *Ož*(V), which she relates to an FU form meaning ‘white’ cf. Mari *ošo* ‘white, blond’, etc., plus - *er*(V) ‘lake’(FU **jarvi-* ‘lake’), cf. Mordvin *erke* ‘lake’ < **er*(V)- *ka*); variant and related forms *Óžerka*, *Óžarka*, *Ížerka*, *Úžerka* (*Úšerka*), *Vožarka*, *Vožaraš*.

(3) *Iž’eŕ*[6] (2006:29–31) is also related to *Vožerka*, though exactly how is unclear.

(4) Similarly, *Ošara* (2006:31–35), denoting a meadow in the Jaroslavl’ area, is derived from the same elements as *Vožerka*.

(5) Ahlqvist (2006:35–39) derives *Semigradovo* from **semi-xra* < FU **sem*(V)-/*sim*(V) ‘black’ + *Xr*(V)-, with the latter element later changed to *-grad-* ‘city’ by Russian speakers on the basis of folk etymology (**semi-grad-* ‘seven cities’[7]), similar to *Krom*(*nica*) above.

(6) *Sumeŕ* (2006:39–41) may also be ultimately derived from FU **sem*(V)-/*sim*(V) ‘black’ + - *er*(V) ‘lake’.

Russian forms such as *Belozerovo* < *Béloe ózero* ‘white lake’, calqued on FU forms similar to those cited above, are also found (13), as are forms such as *Čërnoe ózero*, etc., ‘black lake’.

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[4] Another supporting element cited by Ahlqvist as present in the Kromnica area (2006:25, 44 fn. 47), *Vέksa/Vëksa*, is used in the formerly Merya area to refer to a ‘connecting river between lakes’, and may be derived from a form close to Mari *iksá* ‘bay, cove, recess’.

[5] The initial *v-* is prothetic and due to internal Slavic processes, and the *-ka* is a Russian diminutive suffix.

[6] The persistence of the soft *ž’* in *Iž’er*, (*Iž’er* < **Iž +jer/jär*; 2006:31, fn. 31), after its loss almost everywhere else in Russian, might also be seen as a linguistic ‘trace fossil’. A similar set of examples might be cited from the mid-Western United States, e.g., *Michigan*, *Chicago*, *Champlain*, *Champaign-Urbana*, etc., also the river names *Chemung* and *Chenango* in upstate New York, which maintain the French orthography used for rendering /š/ in original Indian names.

[7] The apparent basing of a folk etymology on South Slavic *grad-* as opposed to East Slavic *gorod-* (both < Common Slavic **gVrd-*) may be of interest here.

White lakes usually have shallow, clear, sandy bottoms, while black lakes are deeper, and richer in humus (2006:28–29) or peat (2006:41).[8]

Ahlqvist's article, therefore, provides an overall view, richly illustrated with examples, of how purely linguistic data can provide information to add to the big picture in reconstructing the natural world and lost landscapes, in this case, the existence of now-vanished lakes.

2. EVIDENCE FOR THE RECONSTRUCTION OF EXTINCT WILDLIFE—POSITIVE AND NEGATIVE. One example where linguistic and biological data actually interface, as opposed to merely providing parallels, is provided by examples where place-names, traditions, etc. provide evidence, both positive and negative, of extinct animals, or, in one case, the replacement of humans by domestic animals.

### 2.1. SCOTTISH HIGHLANDS AND ISLANDS.

2.1.1. THE EARLIEST EXTINCTION. Scottish toponyms, especially oronyms (mountain names), suggest that the earliest recorded extinction there may be that of the Irish Elk, commemorated in the oronym *Ben Oss* (< Old Irish *os* < **ohso-*; cf. English *ox*).

2.1.2. BEARS. Bears have been extinct in Scotland since the tenth century. Drummond (1991:176, 181), however, points out that some oronyms with Gaelic *biast* 'beast, monster', e.g., *Ruigh na Béiste* 'the monster's slope' (lit. 'slope the monster.GEN'), may actually refer to bears.

2.1.3. WOLVES. Wolves have been extinct in Scotland since the eighteenth century and are commemorated in oronyms such as Gaelic *Beinn Ulbhaidh* 'wolfish mountain', clearly from Scandinavian *ulf-* , rather than native Gaelic *madadh-allaidh* 'cliff dog' (lit. 'dog-cliff.GEN'), or earlier *faol*. Certain instances where *madadh* appears without any modifier may refer to wolves rather than foxes (Drummond 1991:177).

2.1.4. BOARS. Wild boars have been extinct in Scotland since ca. 1400. They are remembered in oronyms with *torc*, e.g., *An Torc* (sometimes referred to as the Boar of Badenoch, paired with the Sow of Atholl, in Drumochter), *Càrn an Tuirc* 'wild boar's cairn' (lit. cairn the boar.GEN) (Glen Clunie); (Drummond 1991:176, 177, 181).[9]

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[8] Ahlqvist (2006: 39) further points out that *озеро*, *озерцо*, *озёрка*, etc., in Russian typically denote a much larger variety of bodies of water than English *lake* (39), ranging from *Ладожское озеро* (Lake Ladoga) down to tiny ponds (she records one only two or three metres in diameter (2006: 39)), possibly closer to the denotations and connotations of Scottish Gaelic *loch* (*озеро*), *lochan* (*озерцо*, *озёрка*, etc.). Further, Russian names such as *Béloe ózero* and *Čërnoe ózero* find fairly close parallels in the Scottish Highlands in *Fionn Loch* and *Dubh-Loch* respectively, with similar denotations and connotations.

[9] Of course, one must always be aware of the temptation to read too much into such scraps: Mowat (2000:31, 337) makes the superficially tempting suggestion that the name *Orkney* (*Orcades* to Classical authors such as Pomponius Mela, Tacitus, etc. < *orca* 'sea monster') may originally refer

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2.2. USA. One of the most astonishing recorded extinctions was the Passenger Pigeon in North America, taking about a century to decline from flocks of possibly more than a billion birds so that "the light of noonday sun was obscured as by an eclipse" (an observation by John James Audubon in 1813; see Silverberg (1967:148–164), Day (1981:32)), to the last representative of the species dying in Cincinnati Zoo in 1914. According to Kanze 2004, it is the Passenger Pigeon that is commemorated in place names around the Adirondacks in upstate New York such as *Pigeon Lake*, *Pigeon Mountain*, and *Pigeon Roost*. The last-named is more remote from human habitation than the other two.

### 2.3. AUSTRALIA.

2.3.1. THE CRESCENT NAILTAILED WALLABY, THE BILBY, AND THE GHOST BAT. Sharpe and Tunbridge (1997:351–356) cite similar phenomena from Australia. Based on orally transmitted myth and song from the Yura Ngawarla language of the Adnyamathanha in South Australia, they conclude that such traditions provide evidence that the species listed above once existed in the Flinders Range.

2.3.2. TASMANIA. On more charismatic[10] level, our knowledge of the better-known extinction of the Tasmanian Tiger on the Australian mainland may also be supplemented by the same sort of material. Sharpe and Tunbridge (1997:356–57) cite similar evidence from the same corpus to suggest that it only died out in the Flinders Range within the last 150 years.

2.3.3. AUSTRALIAN MEGAFAUNA. The same material also includes hints that the final extinction of Australia's megafauna, especially the rhinoceros-sized Diprotodon (Sharpe & Tunbridge 1997:357–58), may have taken place far more recently than supposed.[11]

2.4. SOUTH AFRICA. Sometimes evidence of animals hunted to extinction by literate peoples may also be preserved in poetry, even in texts not especially esteemed by literary critics, and not normally studied as literature. Thomas Pringle, a minor early nineteenth-century

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to the walrus, long extinct in the area, but a close reading of his "evidence" reveals perhaps excessive speculation:

> "I suggest that the natives of Britain's Northern Islands called the walrus *orc*, which was why Pytheas called the archipelago the Orc Islands - later Orcadies [sic]. Eventually orca acquired the more generalized meaning of 'sea monster', which is how it was used in the Middle Ages. In the nineteenth century it was again particularized by its inclusion in the Linnaean system of animal classification as *Orcella*, a generic name for grampuses and killer whales. So with regard to word usage the walrus has now become the killer whale."

As may be seen from the above, Mowat's actual evidence is rather thin, and it is best included in this paper as an example of over-enthusiasm to be avoided.

[10] "Charismatic" is often used nowadays to describe species such as pandas, rhinoceroses, tigers, blue whales, etc., in danger of extinction, as opposed to smaller reptiles, rodents, insects, etc.

[11] Australia used to have a number of large animal species (megafauna), most of which are normally considered to have become extinct (around 48,000-60,000 years ago, during the Pleistocene).

South African poet, provides us with a piece of information, unattested elsewhere, on the now-extinct quagga (a subspecies of zebra):

> "Afar in the desert I love to ride,
> With the silent Bushboy alone by my side
> O'er the brown Karroo where the bleating cry
> Of the springbok's fawn sounds plaintively
> **And the timorous quagga's shrill whistling neigh**,
> Is heard by the fountain in twilight grey."
> (quoted in Silverberg 1967:97–98)

2.5. NEGATIVE EVIDENCE, POINTING TO ABRUPT EXTINCTION OR APPEARANCE.

2.5.1. MOAS. Wolfe (2003:68–78, 173–82) offers a comprehensive discussion of the references to the moa, the largest flightless bird ever recorded, available in Maori at the time of the first European settlement in New Zealand. Although archaeological research has shown that the Maoris did know the moa, their proverbs and poetry yield very few references to it, even to the extent that Colenso, the first to use the word *moa* in print, came to believe that it had actually been his early researches into the moa that had provided the Maoris with much of their knowledge. There are a few place names attested from the North Island referring to the moa, and hardly any from the South Island. The available evidence seems to point to the moa becoming extinct fairly rapidly after the arrival of the Maoris in New Zealand. Wolfe concludes:

> "With such a rapid disappearance, perhaps it was hardly surprising that the bird made little impression on the oral record of the Maori. For later generations the larger moa may have transcended the realm of earthly birds altogether to inhabit the world of spirits, much to the frustration of European inquirers who could not understand how such big 'birds' could have disappeared so completely." (2003:182)

As a supporting point, Heuvelmans (1972:157) suggests that the fact that the first reports of the moa heard by Europeans came from the North Island, and referred to heroes and demigods as much as birds with human heads, points to the earlier extinction of the moa there, and knowledge thereof being more remote than in the South Island, where the moa persisted for much longer.

2.5.2. A FURTHER EXAMPLE FROM THE SCOTTISH HIGHLANDS is provided by sheep (Drummond 1991:171). During the Clearances (ca. 1780–1850) large numbers of people were expelled from the Highlands to make way for sheep, which had previously been almost unknown there. Therefore sheep are later arrivals in many parts of the Highlands, and this is reflected in the rarity of their occurrence in toponyms. In this case, of course, the linguistic material offers confirmation of already well-known historical fact.

3. VANISHED TOWNS. Linguistic trace fossils can also furnish supporting evidence in tracing the emergence of entire towns, followed by their vanishing. One such example is provided by the name Kincardine, formerly denoting a royal burgh and castle county town, originally located two miles northeast of the more modern Fettercairn, near Aberdeen. It was first built in stone in the 1200's and declined in the 1600's, being replaced by Stonehaven as the administrative centre of Kincardineshire. Its castle was demolished in 1646, and its Mercat Cross moved to Fettercairn shortly afterwards. Its former existence is still attested in the name of the local county, and some other place names, e.g., Mill of Kincardine, Castleton of Kincardine. The records are much more recent, and of a far different order, than in cases such as those cited above for pre-settlement Australia or pre-Slavic North Russia, and much more complete than those cited for elsewhere in Scotland in this paper, (see Casely 2007 and Undiscovered Scotland n.d. a and b).

4. LANGUAGES SUBMERGED IN OTHER LANGUAGES. Trace fossils also appear in linguistic reconstruction. On occasion the existence of whole new languages may be inferred by closely scrutinising apparent irregularities in phonological/phonetic development in already well-studied languages. Such reconstructions might be described as linguistic trace fossils in purely linguistic contexts.

4.1. PELASGIAN. Georgiev (1981:96–107) proposed a plausible framework for dealing with certain apparent irregularities in Greek (which do follow a discernible pattern). He suggested that within these irregularities one can see the outline of another, closely-related, Indo-European language, which he called Pelasgian (1981:105–7). This is exemplified by forms such as Greek πύργος 'tower' (1981:99), clearly related to IE *_bhrgh-_, although if genuinely Greek developments had been followed one might have expected something like *πάρχος, cf. Common Slavic *_berg-/*brg-_ (cf. Russian _берег_ 'shore', etc. ~ Czech _brh_ 'den, cottage'; Common Germanic *_berg-/brg-_ cf. Old English _beorg_ 'barrow' < *_berg-_; _burh_ 'fortress' < *_brg-_; Avestan _barəzah_ 'mountain'; Common Celtic *_brig-_ > *_briγ-_ > *_breγ-_ (cf. Gaulish _briga_) > Welsh, Cornish, Breton _bre_; Irish _bri_), etc. For further discussion and criticism of the Pelasgian theory, see Katičić (1976:81–87) and Beekes (1995:32).

4.2. TEMEMATISCH. Holzer (1989) makes a similar suggestion with regard to explaining apparent irregularities in voicing and devoicing in certain Slavic forms. He labels this submerged language Temematisch (1989:14) and tentatively identifies it with the language of the ancient Cimmerians (1989:177–221). He is therefore able to offer several original etymologies for certain problematic Slavic forms, suggesting that, e.g., Common Slavic *_kvait-/kveit-_ 'flower' (Polish _kwiat_, Russian _цвет_, etc.) and *_gvaizd-_ 'star' (Polish _gwiazda_, Russian _звезда_, etc.) should be treated together. In a later work (Holzer 1991) presents a fairly convincing argument for a Common Slavic root *_zvo-/zvon_ 'dog' (< IE *_k^uō/k^un-_), where the initial *z- is voiced under the _Tematisch_ framework (*svo- dog cf. Lithuanian _šuo_), cf. possibly also Russian _сука_ 'bitch', see also Hyllested, forthcoming, for a synthesis and further discussion.

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5. TRACE FOSSILS IN PALEONTOLOGY. As outlined at the start of the paper, and repeated throughout, trace fossils offer a strong parallel between biological and linguistic reconstruction, see Conway Morris 1999. Lull (1917:414–15) points out that footprints are "fossils of *living beings*, while all of the other relics are those of the dead" (emphasis original; see also Desmond 1977:79, Ward 2004:193–95). Similarly Parker (2003:23–24, 70–75, 258, 269) cites a further set of examples to demonstrate the application of the results of studying trace fossils to paleontology: the life of the Ediacaran and Early Cambrian fauna; the ongoing debate as to the exact relationship between dinosaurs and birds; the posture of the dinosaurs as they walked, etc.

Somewhat surprisingly, although it is out of the period that they cover, neither Conway Morris nor Parker mention a much-discussed example where the reconstruction of a prehistoric life-form was based almost entirely on trace fossils, in this case footprints: the *Chirotherium*. Ley (1966:111–124) gives a comprehensive survey of the history of the discovery and interpretation of the data, gleaned by examining the tracks in considerable detail.

The first footprints eventually attributed to *Chirotherium* were found in 1824, and more and more continue be discovered, both in Europe and in North America. The prints were dated to the Triassic (250–200 million years ago). For quite some time it was unclear whether the prints were those of an early mammal or a reptile, and the names *Chirosaurus* (reptile) and *Chirotherium* (mammal) were both current. Today usage has settled on the name *Chirotherium*, although the animal in question was actually a reptile. It was soon possible to work out that *Chirotherium* had been a carnivore, related to early crocodiles, and related fossils were discovered in South America. Eventually it proved possible to reconstruct a whole family, the *Chirotheriidae*, based mostly on the footprints.

In a semi-popular work with lavish illustrations, Augusta (1960:Plate 16) feels confident enough to reproduce an illustration of the *Chirotherium* on a par with the Pterodactyl (22), Brontosaurus (24), Tyrannosaurus Rex (34), Mammoth (51), Sabre-Tooth Tiger (59), etc., and is worth quoting at length:

> "[T]he mysterious saurian *Chirotherium* waddled onto the boggy ground and imprinted indelible footprints, preserved for ages .... [T]hough [its footprints] have long been known ... not a single bone from this saurian has been found .... The palaeontologists did not surrender even when faced with the mystery of the Chirotherium, but on the contrary, with the tenacity proper to them, they used all their knowledge and experience in order to determine just from the footprints which animal had made them and how it looked. It would be a great victory for the human intellect should the find of a real skeleton confirm all the conclusions which the paleontologists have drawn on the mere basis of footprints." (1960: facing plate 16)

Recently it has been suggested that the footprints of the *Chirotherium* may in fact be linked to the *Ctenosauriscus* (see Ebel et al. 1998 and the literature cited therein), suggesting that the latter produced the tracks reconstructed for *Chirotherium*.

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The case of the Chirotherium may be cited as an example of the well-known comparison of the existing fossil record and a movie where only a few individual slides are available for reconstruction purposes. I would like to suggest that the movie analogy is also a fruitful way of viewing linguistic reconstruction, if only to try and capture an idea of the scale of the problems involved

6. LANGUAGE LOSS. Linguistic fieldworkers and other researchers have preserved many forms in the nick of time, a topic that has become more urgent in recent years. Dixon (1997:107, 135–38) repeatedly draws attention to the ongoing loss of languages throughout the world, citing copious references, and ends with a vigorous call for more detailed study of the large number of languages, dialects, and variants that are rapidly becoming extinct. One can only echo Dixon's concerns. To take one example, it is clear from the accounts in Dixon (1972, 1983) and Schmidt (1985) that Dixon's recording of Dyirbal, which "revolutionized our view of ergativity" (Comrie 1978:393, see also Schmalstieg 1980:18) was a close-run thing. Dixon's main informant passed away in 1975, about a dozen years after Dixon started work on it, and the language was described as "dying" a decade later by Schmidt (1985:233–234). Many of the individual forms discussed in this paper fall into that category.

6.1. *OŠARA*. One form preserved in the nick of time by a fieldworker is provided by *Ošara*, cited above. Ahlqvist points out (2006:34–35) that, if it had not been recorded, whether in writing or on tape, it would probably have been lost along with the upcoming death of the last aged survivors of the surrounding community. This is nowadays an increasingly common phenomenon within the overall context of the current alarming rate of language loss.

6.2. THE ISLAND OF RHUM. The Ordnance Survey did their initial survey of the Scottish Highlands and Islands when Gaelic was still the first language of much of the area and therefore has actually proved to be responsible for the preservation of Gaelic oronyms all over the Highlands in increasingly fossilised form, through numerous editions and revisions of their maps, see Gardner (1948:15–16; 64), Borthwick (1939:142–143, 173).[12] In this context another example of the near-loss of a trace fossil illustrating a small, albeit vital, slice of linguistic history, is provided by the major oronyms on Rhum. Mitchell (1998:155) describes how in 1877 the Ordnance Survey found only one elderly survivor of the Clearances who remembered the old place-names on the island, especially the distinctive Scandinavian-derived oronyms (see also Drummond (1991:149–150)):

*Trollaval* < Old Icelandic[13] *Trollafjall - troll* 'troll' + *fjall* 'mountain'
*Askival* < Old Icelandic *Askifjall - askr* 'ash, spear' + *fjall* 'mountain'

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[12] Nowadays, as the range and knowledge of Gaelic shrink, more and more "hybrid spelling pronunciations" are taking over, in the mouths of speakers from points further south, e.g., Cìche [kiːçə] is often pronounced [kiːʃ], correct on the onset, but failing on the coda.

[13] These oronyms may have come into being before Iceland was settled by Scandinavians, making "Old Icelandic," strictly speaking, an anachronism.

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*Allival* < Old Icelandic *Hallafjall - hallr* 'ledge' + *fjall* 'mountain'
*Ainshval* < Old Icelandic *Ásafjall - áss* 'rocky ridge' + *fjall* 'mountain'
*Barkeval* < Old Icelandic *Bjargafjall - bjarga* 'cliff'+ *fjall* 'mountain'

6.3. THE FILE DRAWER PROBLEM. Yet another problem, hinted at by Fagan (2000: xix, see above) is flagged by Lomborg (2001:35–42), who argues that "research… tends to investigate areas where problems can arise." In this context he further points to what he calls the file drawer problem. This applies to research which does not turn up connections and tends be ignored. So some unpublished study in someone's file drawer might be able to disprove research which purports to reveal significant connections (Lomborg 2001:36). He also cites "data massage (torturing the data until they speak)" in favour of revealing one, even lopsided, significant connection should always be borne in mind. In support of his arguments he cites lopsided studies of acid rain (2001:37), hunger in Ethiopia (2001:39), and El Niño (2001:40–41). To complicate matters still further, it is less noted that etymological studies may be subject to an alarming degree of chance. Just by keeping their eyes open, linguists interested in etymology are confronted with material and leads on a constant basis, and it is often unpredictable which one may suggest itself for pursuit on a given occasion.[14]

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[14] See Orr 2008:79 fn. 7 for an example of the role that sheer chance may play in such studies.

7. CONCLUSION. Mainly referring to that part of Russia where Finno-Ugric languages used to be spoken, Uino (2006:358) calls for a multidisciplinary study which would integrate "archaeology… historical sources… linguistics… ethnography and folklore… physical anthropology… [and] palaeoecology" in order to determine and reconstruct patterns of settlement. It is to be hoped that similar linguistic work will continue to be conducted, not just on settlement patterns, but also the whole natural and man-made world, and that a broad overview might be produced one day, encompassing a comprehensive survey of landforms, flora and fauna, and archaeology.

The phenomenon of trace fossils briefly treated here and utilised to reconstruct important aspects of the respective life-forms, is a very similar tool to various forms of linguistic reconstruction, as repeatedly argued above. Examples actually seem to be more common in linguistics in the broadest sense than in biology, and the suggestion might be made that evolutionary biologists might be a little bolder in using them.

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# TIME AS A PERSUASIVE PATTERN IN AN OBAMA SPEECH EXCERPT

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**Abstract:** This article examines the role that time plays in the development of persuasive arguments in an excerpt of a speech by United States President Barack Obama. The approach taken is that of time-linear content analysis, which traces the dynamic build of information in a text as it progresses from left to right. This paper examines some of the hidden connections between time, meaning and style and discusses their implications for real-time, semi-formal time-linear content analysis. More specifically, the article examines some of the problems which surface when we attempt to answer two simple questions concerning the indication of time: a) how is time represented in a text? and b) how is time used in the text? The text examined is an excerpt from President Obama's inaugural speech of January 20, 2009.

**Keywords**: Barack Obama, discourse analysis, Discourse Information Grammar, persuasion, time

**Languages**: English

It would seem to be a straightforward matter to indicate time in a text. Equally straightforward would be the use of time in the same text. However, when we approach discourse analysis from the perspective of linear accumulation of information in real time, several interesting problems arise. It seems that time is much more woven into the structure of a text than the casual reader may usually assume. Also interesting is that the notion of a text as a sequence of isolated words linked together by grammatical rules appears to be an abstraction which is belied by the processes underlying the actual processing of a text in linear, real-time conditions. As we will point out, a text is much more than the linear accumulation of its words. There are numerous information specifications being made and carried through the text which traditional analyses have either ignored or simply overlooked. It is the purpose of this paper to examine some of these hidden connections and their implications for real-time, semi-formal simulation of text processing. More specifically, we will look at some of the problems which surface when we attempt to answer two simple questions concerning the indication of time: a) how is time represented in a text? and b) how is time used in the text? The text we examine is an excerpt taken from President Obama's inaugural speech of January 20, 2009. For ease of reference, it has been appended to this paper. This article is necessarily summary and impressionistic, given the space limit on description. We have chosen to give a flavour of the sort of results that this sort of analysis can provide rather than an exhaustive catalog of the use of time in the text.

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1. TIME IN CONTENT ANALYSIS AND LINGUISTICS. Very little has been done in the content analysis of texts on issues of deeper semantic significance. Most approaches to content analysis have been keyword-based. In fact, one of the most popular textbooks in the field, Neuendorf (2002:196), glosses linguistics as having become largely focused on structural and cognitive modeling of grammar. She describes a different literature focused on the specific field of semantic network modeling of texts. She cites Carley (1997:79), who notes that "language can be represented as a network of concepts and the relationships among them. The network can be thought of as the social structure of language, or, equivalently, the representation of extant social knowledge." These linguistic technologies have not advanced to the point where they serve as anything more than a guide to reading or a first pass of the data for sorting and basic categorization purposes. Krippendorf (2004:281) indicates that these computational semantic theories are still primitive and only capable of capturing rudimentary textual relationships reliably. There are really two commercial enterprises that make use of computational linguistic techniques for content analysis, mostly to track messages for the public relations industry: Biz360 (*http://www.biz360.com/*) and TNS Cymfony (*http://www.cymfony.com/*). Their methods are proprietary, but results do not indicate a high level of semantic sophistication in their analyses.

The present study takes a novel approach to content analysis. It is an informal implementation of Discourse Information Grammar (DIG), a theory of incremental discourse analysis meant to simulate language processing the way people do it, although it claims no psychological realism. DIG aims to examine the accumulation and intersection of different streams of information in a text (Sévigny 2002, 2003a, 2003b, 2004, 2006, 2007). This article examines how a DIG analysis would handle the role of build up of temporal information in a speech. We have chosen the inaugural address of American President Barack Obama because anecdotal readings indicated that temporal information played a large part in the effectiveness of this speech.

There is considerable literature on the representation of time in linguistic theory and content analysis, but none approaches content analysis in quite the same way as we do in this paper. Henk Verkuyl (1999), for instance, attempts to introduce time into generative linguistic theory. Wolfgang Klein's (1994) perspective is somewhat more appropriate to the study presented here, since it investigates the lexical semantics of verbal terms from the perspective of both speech and writing. Alice G. B. ter Meulen (1997) presents a theory of natural language based on situation semantics which attempts to build a representation of time that keeps track of semantic, pragmatic and discourse information. Were we to take a more linguistic-oriented approach to time-linear modeling of language processing in this speech, ter Meulen's work would probably be the most useful to our approach, since her computationally-tractable, incremental tree-based approach to modeling time in a text from a semantic and pragmatic perspective with a focus on situation semantics is compatible with the context-building approach taken in Discourse Information Grammar. However, as mentioned at the beginning of this section, these theories have little to inform the communication analysis approach taken in this paper.

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2. REPRESENTING TIME IN A TEXT. As in any text, two time representation mechanisms are present throughout this text: a) the use of various time words (nouns indicating time: *day*; adverbs of time: *today*, *now*; b) verbs marked for time: *I stand*, *are*, *have chosen*, *traveled*). In fact, the text contains 81 instances of verbs marked for time, 34 of which indicate the past, 45 indicate the present and 2 indicate the future. A quick reading would yield the result that the text consists of mainly past references and present references. But, upon reading (or hearing) this text, the reader/listener is struck by the sensation that the speech is overwhelmingly present-based. How can we account for this discrepancy of impression? What happened to the nearly 50% of past references?

The answer begins to appear when we consider that people process this text in an accumulative, linear manner: words come in one at a time, dump their information load and become integrated into the fabric of the text. This form of analysis differs from those methods which separate the underlying structure of the text from its informational content. The method used in this research, does not effect such a separation because of its underlying assumption: the text is not the result of applying Lego-like words to underlying structures; rather, the text results from an accumulation of integrated information. Each word affects certain informational specifications of the words which connect to it in various ways. This brings in various links which are often overlooked. For instance, the opening three words, *My fellow citizens:*, are processed as a nominal phrase used as a vocative, as indicated by the colon, *:*, which in DIG is a lexical item, one of the separators whose particular function is to signal that a vocative or a topic has been triggered. Part of the meaning of this functional entails the signaling of present time. Thus, this vocative is processed as a time marker. This temporal specification is reinforced when the words *I stand here today* are processed. We are now clearly in the present. We are also in a specific place: *here*, which also connotes present time unless specified otherwise in a marked sense.

As mentioned above, there are tenses which denote past, present and future in our text. What has not yet been mentioned is that there are two other types of temporal categories: the present-perfect and the timeless present. Both these time references can be seen throughout the text. The present perfect occurs 18 times, and is distributed throughout the text. Its meaning is simple: it denotes that an activity or state began in the past and **continues to hold at the present**. Thus, the past references it makes are actually present-oriented. This enhances our sense that this text is present-based. The timeless present, usually called the aorist in traditional grammar, refers to a present state which is not dependent upon events. A typical occurrence of this time marker is found in mathematical formulas whose truth is timeless. In English, we usually indicate this timeless quality by using the definite article and a noun which may or may not be specified by descriptive limiters. Our text uses such a structure many times: *the task before us* (which task is that?), *the presidential oath*, *the words* (of the oath), *the faint-hearted*, *the risk-takers*, *the doers*, *the makers of things*, *the journey*, *the lash of the whip*, *the hard earth*. All of these words require a definite interpretation which must be provided by context and audience. Once again, present time is connoted because the audience must be the source of this interpretation. Some of the timeless expressions occur in subtexts which are clearly marked for the simple past, but they become timeless present indicators because of their definiteness which must be actualized by the readers of (or listeners to) the text within which these expressions occur.

Another time marker is the possessive adjective *our* as in *our ancestors*, *our nation*, *our forbears*, *our founding documents*, *our collective failure*, *our health care*, *our schools*, *our journey*. This is not a complete list. What these several examples have in common is a common referent: the speaker *I* and the audience *you*. Because of this, the word *our* becomes rooted in the present of the text. Given that the *our* expressions occur throughout the text, we have yet another temporal thread running through the text, emphasizing that it is present-based.

Normally, deictics are not closely associated with the indication of time, but this particular text contains several examples where deictics connote time. Examples are fewer, but there are several: *this transition*, *at these moments*, *this generation of Americans*, *this day*, *that precious gift*, *that noble idea*. The last two examples fall into the timeless category, while the examples preceding them depend on information pertaining to the text as it is being processed.

Another hidden indicator of time can be found in the category of continuation. This text makes several uses of the continuators *and* and *so*. They are labeled continuators because part of their functions is to indicate linking and to indicate that no change is being triggered. Continuation is indicated in the following example: *Our health care is too costly; our schools fail too many; and each day brings further evidence that the ways we use energy strengthen our adversaries and threaten our planet*. Following two quick examples processed as problems, the word *and* introduces text which continues the list of woes besetting present-day America. Throughout the example, the time indicated is the present. The conjunctive adverb *so* is also used to indicate time, and incidentally emphasize present time. *So it has been. So it must be with this generation of Americans*. The information accumulated in the preceding paragraph is brought into the present through the use of the present perfect *has been* and the temporal indication is reinforced because of the modal *must* in *must be*. There is actually an accumulation of temporal indicators in this last example: a) the word *so* itself evokes the notion of 'no change' or 'continued status' b) the present perfect itself is, as noted above, present-oriented and c) the expression immediately following *this generation* is also a clear reference to the present.

Yet another means of indicating time rests in the use of summarizing words. For instance, following a series of present woes facing America, the text continues with the summarizer *these* in the expression *These are the indicators of crisis*. Again information accumulation indicates present time at least twice: *these* refers to the woes whose present time status has been established. The predicate connecting *these* to the subjective completion *the indicators of crisis* is a verb in the timeless use of the present tense.

Time can also be indicated through logical structures. For instance, contrast dominates the structure of the second paragraph. The adversative conjunction *yet* triggers a contrast to the *prosperous* and *peaceful* circumstances during which the oath has been taken. The implication is that the oath has been and is being taken during *non-prosperous* and *non-peaceful* circumstances. This is immediately supported by the paired expressions *gathering clouds* and *raging storms*. This reality is reiterated and made present through the words *at these moments* and brought into the present by the use of the present perfect in the expression *America has carried on*. Consider the example *At these moments, America has carried on not simply because of the skill or vision of those in high office, but because We the People have remained faithful to the ideals of our forbearers, and true to our founding documents.* Again, contrast is used as indicated by the words *not … but* with the entire example emphasized as being in the present through the use of the present perfect *have remained*. Once again, we see the past being used to develop the present, emphasizing the presentness of the text.

Repetition is used several times to indicate time in the text. For instance, there is a temporally based motif in the series *today* in *I stand here today*, *Today I say to you*, *on this day* in the repeated *On this day, we gather*, *On this day, we come*. These expressions act as a temporal thread which connects the first half of the text. Again, repetition is used rhetorically in the triplet *For us, they packed up …*, *For us, they toiled …*, *For us, they fought and died ….* The present specification is attached to the pronoun *us* and the actions, clearly marked as past events, are linked to the present through their teleological nuance. This parallels the use of the 18 present perfects which occur throughout the text.

There is another indication of the time in this text which is more subtle in some ways. In the second last paragraph, we have repeated past actions teleologically aimed at the present, represented in this case through the use of *we* and the reference to *our ambitions*. At first sight, this seems illogical, since those men and women could not have foreseen the ambitions of today's citizens. However, they are not referred to as ***those*** *men and women*, but as ***these*** *men and women*. Thus, the present is once again connoted, but indirectly in this case.

Time is also emphasized through the use of metaphors. For instance, there are references to *the journey* as in *This is the journey we continue today*. Note that the metaphor is coated within text which is clearly marked for the present. Analogously with the many occurrences of the present perfect, this text also implies something from the past and continuing into the present. Since *we continue* the journey, we did not start it. Hence, it began before we embarked on it. But it continues to hold. In many ways, there is a mixture of the present and the timeless present here, since the journey is presented as being timeless and is present as we continue it.

Finally, there is yet another way in which the text indicates time: in its integrity as a network of information nexi and relations. We comment on this summarily in our conclusion.

3. USING TIME IN A TEXT. Time, as indicated in the preceding section, has been marked in many different ways. However, were these markings there only to structure the flow of the text? The answer would have to be negative. It is not accidental that the present is overwhelmingly stressed. There is a deliberate emphasis on the present throughout the text. Its main purpose has been two-fold: to bring unity to the situation being addressed by establishing numerous links with the past and showing how that situation holds true today and by bringing people from the past and the present together. This was accomplished through historical allusions and references to these people, events and items as *our* people, *our* events and *our* items. It is interesting to note that the text does not say *Forty-**three** Americans have now taken the presidential oath* but *Forty-**four** Americans have now taken the presidential oath*. When the text continues with *The words have been spoken*, there is implied a) familiarity with these words and b) a lack of change in the words, thus imply-

ing continuity and subsequently no real barrier between the audience and their forbears or with their founding documents. Through these many ways of bringing in and emphasizing the present, the text succeeds in creating a sense of inclusion and participation which underlies the whole of the text. Not only does this emphasize the present, but it builds a bridge of familiarity and feeling at home with what Obama is talking about. This transfers onto the speaker himself. This is how the ethos and pathos of a text is built up—pathos being one of the three main rhetorical styles, with ethos and logos, identified by Aristotle, in the *Rhetoric* (1991). Ethos, because in establishing a link between past accomplishment and present leadership, Obama is establishing a basis for audience belief in his character. Pathos, because of the appeal to quiet patriotism and love of country established through the appeal to the past and the bridging of past to present.

4. CONCLUSION AND FUTURE DIRECTIONS. Not all texts are as time-dominated as this one, but all texts, as mentioned above, are more than the mere sum of their words. As we gain more experience with processing texts as evokers and transmitters of information, we see more and more that texts are not merely linear strings of words viewed as isolated Lego pieces which are combined according to the laws of grammar. Words are used to build up texts, but the real essence of any correctly constructed text is the information it combines. Words by themselves do not form the full informational content of a text. Rather, words are used in localized contexts which are then combined into increasingly complex localized contexts, eventually becoming subtexts. These localized contexts and subtexts are marked for time, though its use may or may not be extensive. To borrow from set theory, a text is very much like a power set and subtexts act as equivalence relations. To continue with this metaphor, we could say that one of the subsets of the power set which represents a text is the subset which consists of equivalence relations linked by time. Such subsets have many potential informational roles. As we have shown briefly, time is an effective ingredient of this particular text's persuasive force. This paper is but a first exploration into Barack Obama's effective use of time as a persuasive mechanism. As this small snippet has already demonstrated, there is much more to be written on the topic (including, as one reviewer noted, the notion of aspect). Another area that this sort of analysis lends itself to readily is the dial-turn technology developed by Frank Luntz (2008), since this technology will enable us to see, on a per-second basis, how audience reaction maps onto the incremental build-up and intersection of different types of information in the text.

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## APPENDIX: OBAMA INAUGURAL ADDRESS (20 JANUARY 2009)

My fellow citizens:

I stand here today humbled by the task before us, grateful for the trust you have bestowed, mindful of the sacrifices borne by our ancestors. I thank President Bush for his service to our nation, as well as the generosity and cooperation he has shown throughout this transition.

Forty-four Americans have now taken the presidential oath. The words have been spoken during rising tides of prosperity and the still waters of peace. Yet, every so often the oath is taken amidst gathering clouds and raging storms. At these moments, America has carried on not simply because of the skill or vision of those in high office, but because We the People have remained faithful to the ideals of our forbearers, and true to our founding documents.

So it has been. So it must be with this generation of Americans.

That we are in the midst of crisis is now well understood. Our nation is at war, against a far-reaching network of violence and hatred. Our economy is badly weakened, a consequence of greed and irresponsibility on the part of some, but also our collective failure to make hard choices and prepare the nation for a new age. Homes have been lost; jobs shed; businesses shuttered. Our health care is too costly; our schools fail too many; and each

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day brings further evidence that the ways we use energy strengthen our adversaries and threaten our planet.

These are the indicators of crisis, subject to data and statistics. Less measurable but no less profound is a sapping of confidence across our land—a nagging fear that America's decline is inevitable, and that the next generation must lower its sights.

Today I say to you that the challenges we face are real. They are serious and they are many. They will not be met easily or in a short span of time. But know this, America—they will be met.

On this day, we gather because we have chosen hope over fear, unity of purpose over conflict and discord.

On this day, we come to proclaim an end to the petty grievances and false promises, the recriminations and worn out dogmas, that for far too long have strangled our politics.

We remain a young nation, but in the words of Scripture, the time has come to set aside childish things. The time has come to reaffirm our enduring spirit; to choose our better history; to carry forward that precious gift, that noble idea, passed on from generation to generation: the God-given promise that all are equal, all are free, and all deserve a chance to pursue their full measure of happiness.

In reaffirming the greatness of our nation, we understand that greatness is never a given. It must be earned. Our journey has never been one of short-cuts or settling for less. It has not been the path for the faint-hearted—for those who prefer leisure over work, or seek only the pleasures of riches and fame. Rather, it has been the risk-takers, the doers, the makers of things—some celebrated but more often men and women obscure in their labor, who have carried us up the long, rugged path towards prosperity and freedom.

For us, they packed up their few worldly possessions and traveled across oceans in search of a new life.

For us, they toiled in sweatshops and settled the West; endured the lash of the whip and plowed the hard earth.

For us, they fought and died, in places like Concord and Gettysburg; Normandy and Khe Sahn.

Time and again these men and women struggled and sacrificed and worked till their hands were raw so that we might live a better life. They saw America as bigger than the sum of our individual ambitions; greater than all the differences of birth or wealth or faction.

This is the journey we continue today. We remain the most prosperous, powerful nation on Earth. Our workers are no less productive than when this crisis began. Our minds are no less inventive, our goods and services no less needed than they were last week or last month or last year. Our capacity remains undiminished. But our time of standing pat, of protecting narrow interests and putting off unpleasant decisions—that time has surely passed. Starting today, we must pick ourselves up, dust ourselves off, and begin again the work of remaking America.

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# INPUT, OUTPUT, AND (DE)LINEARIZATION: WHAT WE OWE TO SYDNEY M. LAMB

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**Abstract:** Sydney Lamb's relational network (RN) theory as elaborated during the 1960s and since as neurocognitive stratificational theory provides a principled explanation for the appearance of linear order in linguistic output, given the non-linear nature of the cognitive store. It also provides a principled explanation for anataxis (usually called [synchronic] metathesis) in the relations between adjacent strata. Yet the plausibility of the explanations does not constitute evidence (let alone proof) that the human linguistic system is actually structured in this way, specific details aside. Still, the logic-based system as envisioned from the description of various languages makes certain predictions about actual performance if we take two assumptions of RN theory seriously. First, the human linguistic system in the brain is manifested in a neurological network with the capabilities incorporated into the logical description. Second, it operates by activation that spreads through the network. Certain possible glitches in operation predict several types of speech errors. The present study looks at a substantial and growing body of errors in English and Polish that indicate a linguistic system with five strata between the cognitive store and the oral-aural interface.

**Keywords:** anticipation, perseveration, spoonerism, strata, relational network, timing errors.

**Languages:** Polish, English, Russian

LINEAR ORDER IN TEXTS IS A PROBLEM FOR LINGUISTICS,[1] especially for theories that deal with communication. The cognitive store, from which we get the message that is to be communicated, is non-linear. But the texts that are the output from the linguistic system to the real world and the input to the linguistic system from the real world are linear. They are acousticosyllabic or graphic chains. Linear order was not recognized as a problem for linguistic research before Chomsky. It was simply recognized as a fact of texts. But it was a problem for Chomsky's approaches to syntax. His assumption of a universal syntactic

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[1] I want to acknowledge the input and thoughtful questions posed by Sarah Tsiang and an anonymous referee, among others. I didn't always follow their suggestions, so any remaining errors are my responsibility.

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base combined with the observation that different languages have different constituent sentence orders (SVO, SOV, etc.) leads to the inference that there must be a universal underlying word order. But years of speculation failed to discover what it might be. The minimalist program abandoned that search, recognizing that mathematical trees have no linear order, only hierarchical order. A workshop on linearization in minimalism scheduled for February, 2010, indicates that the problem is still unsolved.

In fact, the problem is still unsolved only in Chomskyan linguistics (hereafter C-linguistics). The problem was not only recognized but solved by Lamb's relational network (hereafter RN) approach. Moreover, studies detailing many parts of the solution have appeared in the literature over the last four decades and more. Lamb's approach is straightforward. The linguistic system is a system of relationships and nothing more. Every linguistic element (phoneme, morpheme, lexeme, sememe) is defined by the sum of relationships it contracts. The linguistic elements are organized into three or more strata at different levels between the non-linear cognitive store and the linear sound. The crucial problem is defining a linguistic system that fits the observable facts, whether linguistic, neurological, or temporal.

The overall architecture of the linguistic system I have found to be necessary for the description of the languages I have personally done worked on (Polish, Russian, English, Bulgarian, and Ukrainian) is sketched in **Figure 1**. There are five strata. Each stratum has a tactic pattern defining the basic elements at that stratum and the relationships between them. It also has realizational relations between the tactic patterns of adjacent strata. Messages are encoded into sound and decoded from sound via the relationships by a process of spreading activation through the network. Along the way the linearization is provided, some on each stratum, as appropriate, a question to which I return.

Two questions remain without a final answer. They involve the number of strata and the internal structure of each stratum. I use an elaborated version of the system in **Figure 1** to account for anataxis (Sullivan 1998). But its successful application to this phenomenon, no matter how elegant, does not prove that the system is structured this way. The present study contributes insights to these questions while providing strong indications of the way the encoding and decoding processes deal with linearization and delinearization.

Specifically, the present study begins with a brief survey of certain facets of linearization which are relevant to the timing questions considered herein. The study itself is based on corpus of errors in speech and writing, in English and Polish, with an occasional example in some other European language. The errors include three types of examples: tactic pattern errors, fixed expression errors, and timing errors (anticipation, perseveration, and spoonerisms). The primary focus of the present study is restricted to timing errors. They show a great deal about the number of strata for Polish and English, some details of stratal organization, and some findings relevant to the storage of fixed expressions. At the end, some evidence about decoding is noted.

Regarding the architecture of **Figure 1**, the drawing in the box provides an outline of the system relative to the cognitive store and the oral-aural interface. The labels in the box, e.g., semology, apply to the entire stratum. The labels along the right are a little more specific. The normal font, e.g., semotactics, refers to the dotted oval, where the basic elements are

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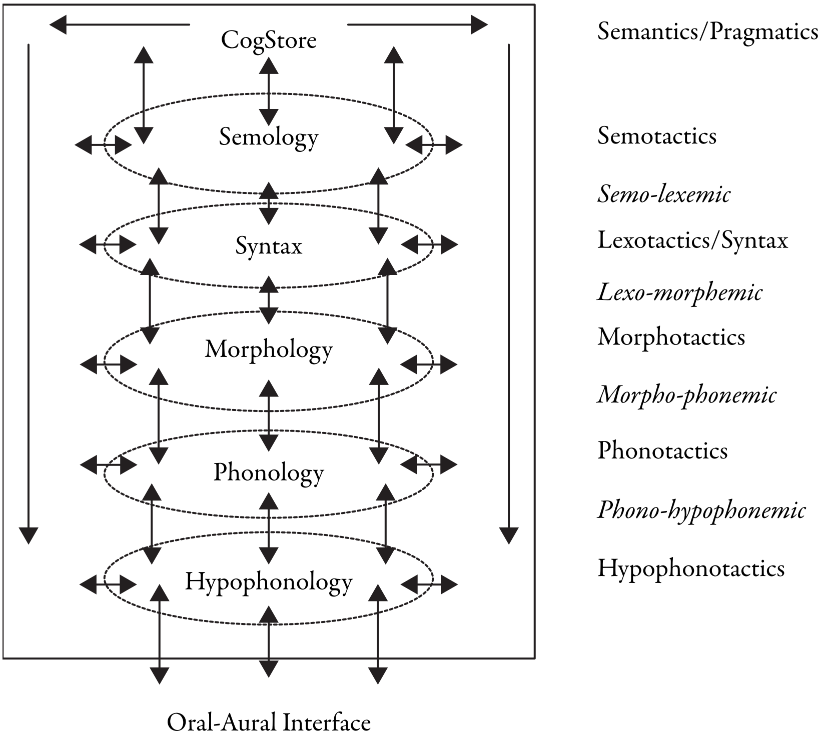

***Figure 1.*** *Outline diagram of the linguistic system, relative to the cognitive store.*

identified and grouped and where ordering between the groupings is specified. The italic font (e.g., *semo-lexemic*) identifies the interstratal realizational patterns. Timing errors arise when the activation of the interstratal realizational patterns is out of synch with the activation of the tactic patterns. Further elaboration of the system is supplied in Section 2.

1. BACKGROUND. Neurocognitive stratificational theory is a fully RN theory of linguistic systems connecting meaning or the cognitive store with sound. Hjelmslev (1953) explicitly limited the totality of a linguistic system to pure relationships, describing them in terms of interlocking definitions. Beginning in the 60's, Lamb began formalizing the relationships in graphic terms. Not all RN work is formalized in graphic terms, however. Hjelmslev used definitions, as mentioned above. Reich and the present author normally use logically-defined broad (i.e., two-way) graphic notation or algebraic formulae.[2] Lamb (1966, 1999, in the interim and since) has used these and narrow (one-way, more neurological) networks. But throughout, his work and that of the rest of us has been compatible with what is

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[2] See also articles in various volumes of the *LACUS Forum* and elsewhere by David G. Lockwood (RIP).

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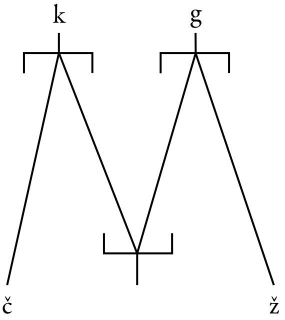

***Figure 2.*** *Some morpho-phonemic realizational relations.*

known about neurology and cognition, hence "neurocognitive". Lamb and those who work in one of his theoretical models have envisioned strata with tactic patterns that define the basic elements and their relations at a particular level of the system along with realizational relations connecting the tactic patterns of adjoining strata. The system is ultimately three-dimensional, like the brain, and whether in broad or narrow notation, it envisions two processes, encoding (to sound) and decoding (from sound), that are defined by and proceed along the network of relations. As mentioned above, there are two empirically open questions, i.e., the number of strata and the details of stratal architecture.

Return to the linguistic system for the present study, as outlined in **Figure 1**. It has five linguistic strata surrounded by the cognitive store. The tactic patterns are represented by the dotted ovals. The dots are intended to indicate that the tactic patterns are not strictly modular. Rather, they are groupings of relationships pertinent to similar functions. The arrows connecting each pair of ovals represent the realizational patterns. Arrows also represent input-output (I/O) relations between the cognitive store and the linguistic system and sound. There are indications that there may be input from the cognitive store directly to any stratum, but I suspect that the main input to the system during the linguistic encoding process is via the semology.

Some details about the distribution of relationships in the realizational patterns are given in **Figure 2** (for Russian) and **Figure 3** (for English). **Figure 2** shows the types of interlocking alternations and neutralizations that occur. For example, in Russian we have a morphophonemic alternation (downward OR relation) between *k* and *č* and another between *g* and *ž*, but there is also a neutralization (upward OR relation) of the voice contrast between *g* and *k*.

The left-hand portion of **Figure 3** shows an example of the composite realization (via an unordered AND relation) of a fixed expression. The sememe *zezwolenie* 'permission'[3] is

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[3] The label for the lexeme in **Figure 3** is given in Polish as an example to indicate that it is **related** to three morphemes, not **constructed** out of them. *Zezwolenie* itself is related to 6 morphemes in Polish.

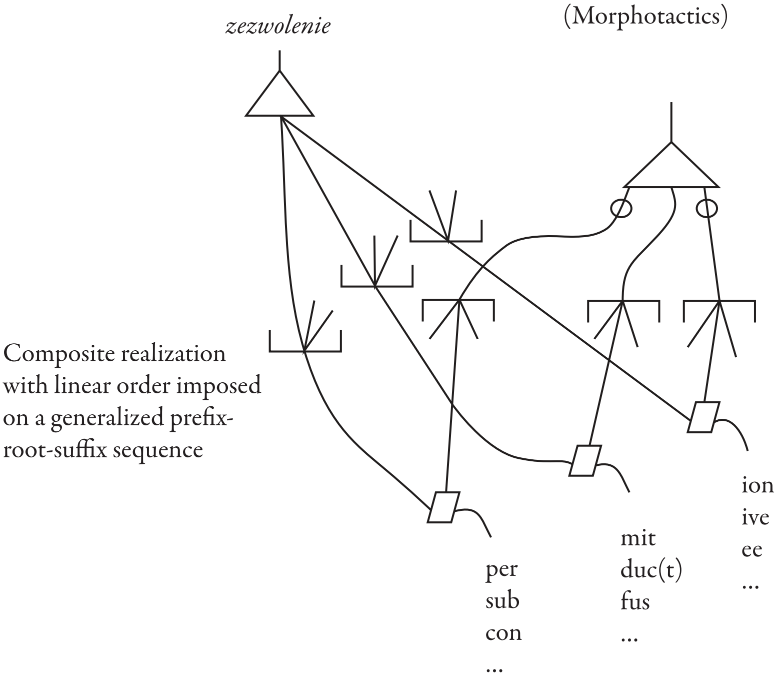

***Figure 3.*** *Some lexo-morphemic realizational relations.*

related via the diamonds (shorthand notation for a combination of upward/downward AND relations) to three morphemes (here labeled as *per*, *mit*, *tion*). The circles on the first and third lines of the morphotactic structure indicate that those two lines are optional.

**Figure 3** shows a portion of the morphotactics that generalizes on borrowings from Latin and provides the linear order (ordered AND) between prefix, root, and suffix. There is no claim in stratificational theory that such a combination of relationships exists in every native speaker of English. But surely native speakers who have studied Latin may have such a subsystem, and other literate speakers sensitive to patterns within words may have such a subsystem, too. It would predict the ability to form and understand new or unfamiliar forms such as *conducive*. I return to this subsystem in section 3.

The mechanism for the encoding process stems from the work of Reich and Dell in the 1970's and 80's (cf. Dell & Reich 1977, Dell 1986). It involves a system elaborated as in **Figures 1** and **2** and involves activation that spreads along lines in a manner defined by the nodes connecting them. Encoding starts with input activation from the cognitive store to the semology and moves gradually through the semotactics as the activation spreads. After a short time the activation starts spreading to the syntax via semo-lexemic realizational relations and moving through the lexotactics. Soon after that it starts spreading to the morphology via lexo-morphemic realizational relations and spreading through the morphotactics. And so on through phonology and hypophonology. The semology generally finishes encoding activation before the syntax, which finishes encoding activation before the morphology, and so on. The time of activation between strata is overlapping, not modular, and it is possible that the hypophonology starts speech output before the semology is finished with its activation. It is, in short, a linguistic system analogue to the parallel distributed processing observed in other parts of the brain.

Now there is no reason to assume that processing on any given stratum is continuous; there may be breaks or rest periods when you can, for example, lose your train of thought. But assuming things work smoothly and as intended, semology defines well-formed groups of sememes and linearizes the groups. Syntax linearizes lexemes across clauses, morphology linearizes morphemes across morphemic words, etc. If this parallel processing is correctly synchronized, the output is grammatical, i.e., that it accurately corresponds to the individual's linguistic system, and the parallel processing accounts for the speed of speech production.

But the system is so complex and so elaborated that there are many opportunities for errors in the process. There are tactic pattern errors (e.g., *I have came* instead of *I have come*), unintentional violations of fixed expressions (*she's as **dumb** as a **plank*** instead of *as thick as a plank* or *as dumb as a post*) as well as unintended puns (cf. Reich 1984), which are not errors, and Freudian slips, which may or may not be errors.[4] Errors, as Lamb keeps reminding us, can tell a great deal about the detail and operation of the linguistic system. As mentioned above, Sullivan 1998 shows that a system like that in **Figure 1** accurately accounts for anataxis as the intersection of relationships that are ordered on one stratum and unordered on another. The alternate orders represent different timing sequences in encoding, and the structures detailed account for them. But this does not prove that the system must have the architecturein **Figure 1**. Timing errors can provide evidence, because they can be seen as a kind of anataxis gone wrong or inappropriately applied. Timing errors are the focus of this study.

2. INSTRATAL TIMING ERRORS. The Dell and Reich (1977) work shows errors in the place of occurrence of phonemic features. They appear in the correct position (onset) of the wrong syllable(s). Dell 1986 adds segmental phonemes to the phonemic features. Both studies identify three types of timing errors: anticipation, perseveration, and spoonerisms. The three types of errors are exemplified in (1), with the locus of the error(s) in bold.

(1) The intended phrase: *Mexican jumping beans*
Anticipation: *Mexican **b**umping beans*
Perseveration: *Mexican jumping **j**eans*
Spoonerism: *Mexican **b**umping **j**eans* (deliberate pun from *Frank and Ernest*)

The classical view of spoonerisms and other timing errors is centered on phonological slips of the tongue, as in (1) and the well-known "toast to our **qu**eer old **d**ean". Here the onsets of

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[4] A recent and widely-disseminated example is from Silvio Berlusconi: "I have spent over two million dollars on **judges**!" (An aide whispers something to him.) "Excuse me, **lawyers**." This sounds like a classic Freudian slip, yet it is clearly an error. That is, it wasn't what SB intended to say. Or so I presume.

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two successive accented syllables appear with each other's syllable finals. Such timing errors are at the morpho-phonemic interface. Dell and Reich (1977) cite evidence for timing errors at the phono-hypophonemic interface as well. My hypothesis is that timing errors occur at the point where realizational patterns interface with adjacent tactic patterns and hence, may occur at each such interface. The prediction is that they will appear at lexo-morphemic and semo-lexemic interfaces, as well as at the other two.

The examples given in the present study were gathered by students in four of my classes at Wrocław and Lublin, two sections of real language processing and two sections of contrastive Polish-English grammar. The language processing students knew what we were looking for and why; the contrastive grammar students did not. I gave them examples of all kinds of errors (timing, tactic, and fixed collocational errors) and told them to record anything erroneous spoken or read in any language they understood. All are native speakers of Polish (one was bilingual in Ukrainian), all are fluent in English, and most are more or less fluent in some other language. They recorded examples in Polish, English, German, Spanish, and Russian. The data gathering assignment constituted half the course grade and was formulated as a contest against me. Anyone who exceeded my error count got a guaranteed A. Those who did not received grades pro-rated against my total. All four groups brought in similar distributions of error types.

3. ANALYSIS. There were two preliminary expectations. First, Smith 2003 cites a statement by Boomer and Laver (1968) that 60% of the timing errors appear between morphology and phonology. I do not know the precise basis for their statement, but it makes sense, in light of Charles Hockett's frequent observation that by the logic of opaque idioms (the meaning of the whole is unrelated in any way to the meanings of the parts), every morpheme is an opaque idiom (i.e., phonemes have no meaning). Second, since spoonerisms seem to combine anticipation and perseveration, they should be less common than either of the other two. Neither expectation was found to be true.

3.1. CLASSIFICATION AND ANALYSIS. Well over 300 examples were gathered. There were some duplicate examples, as when seven students in the class of one of my Wrocław colleagues brought in a timing error she had made in class. Each student got credit for an example, but the 300+ figure counts the duplicates only once. The first classification divides the timing errors from all the others, providing 156 different examples. The second classification divides the errors into the appropriate interstratal levels as in **Figure 1**, that is, whether they were semo-lexemic, lexo-morphemic, morpho-phonemic, phono-hypophonemic. The third classification divides the examples into anticipation, perseveration, and spoonerisms at each interstratal level.

There were some problems with classification ambiguity. That is, it is impossible to say whether ***sh**econd self* is evidence for a spoonerism in place of articulation (phono-hypophonemic) or a spoonerism of onsets (morpho-phonemic) between two consecutive stressed syllables. Simililarly, it is impossible to say whether *wcześniej Slowacja, Malta, i Czech**a*** [*Czech**y***] 'previously Slovakia, Malta, and the Czech Republic' represents a perseveration of the final vowel (morpho-phonology) or of a nominative singular ending (lexo-

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morphemic) to a noun that is pluralia tantum. In the case of this kind of timing error, I counted them in both ways. Another kind of error, though credited as such to the student, was simply left out of the final count. The error *rerifer* (for *renifer* 'reindeer') is doubly ambiguous. It could involve place of articulation or syllable onset and, in either case, it might be perseveration, anticipation, or even both. This provides a set of six possible error combinations (2 interfaces x 3 error types). There were also examples of speech errors that showed the effects of more than one stratum. *A bosket of bix* 'a box of biscuits' could be a case of the spoonerism of two lexemes (semo-lexemic) combined with a spoonerism of the vowels of those lexemes (morpho-phonemic). Alternatively, it could be a spoonerism at the morpho-phonemic level involving everything but the stressed vowels. There are also unintentional combinations of two fixed expression, e.g., *she's as* ***dumb*** *as a* ***plank***. Errors of this type seem to involve fixed chunks from the cognitive store broken apart and recombined in semology. A variant of this produces what are called perverbs, but there's an additional factor here. Some intent, often humorous, is involved, e.g., "A fool and his money is a friend indeed" (Taylor 2003). So-called Freudian slips, which involve unintended double entendres, would be classified here.[5] Or consider the explanation offered by a British (UK) radio announcer being interviewed on Radio-Television Eire One radio: "The Orthodox celebrate Christmas according to the Gregorian Chant calendar." This comment involves at least two errors, one of them apparently cognitive, and perhaps more, though there are no timing errors here.[6] Finally, do some types of stammers and (re)duplication also fit in here? Clearly, there are plenty of unanswered questions.

3.2. FINDINGS. A summary of findings with numbers of occurrences and examples is given in **Table 1** (following page). Type **a** is for anticipation, **p** for perseveration, and **s** for spoonerism.

3.3. SOME OBSERVATIONS. The numbers are plain. Timing errors give evidence for four interstratal patterns, as indicated in **Figure 1**. The largest set of examples comes from the morpho-phonemic level (40%). But it is only two-thirds the size Smith 2003 cites from Boomer and Laver (1968), which is 60% of the total. This discrepancy requires further investigation. At the same time, the sum of semo-lexemic and lexo-morphemic errors is about the same as the phono-hypophonemic errors. This may be a statistical anomaly or a result of the data gathering method or even a combination of other factors, but it also requires further research.

Spoonerisms present a number of unanswered questions. They seem to combine anticipation with perseveration. This suggests that they should be less frequent than the other

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[5] I am indebted to Sarah Tsiang for pointing this out to me.

[6] One reader requested more detail here. The correct statement would be that the Orthodox celebrate Christmas according to the *Julian* calendar. The Western Church uses the Gregorian calendar. Another tradition in the Western Church is the Gregorian chant, which is not used in the Orthodox Churches. So there's a cognitive error (factual confusion between Julian and Gregorian calendars) and the additional activation of the fixed (lexemic) expression *Gregorian Chant* where no singing is involved.

| Level | Type | Examples | # |
|---|---|---|---|
| Semo-lexemic | a | (none reported) | 0 |
| | p | (none reported) | 0 |
| | s | she put her **ears** into her **fingers** | 22 |
| | | *palenie* ***raka*** *powoduje* ***tytoń***<br>'smoking crab/cancer leads to tobacco' | |
| | Total = 22 (14%) | | |
| Lexo-morphemic | a | *śląsk**ami*** (for *śląsk**imi***) *rzeczami*<br>'Silesian matters.INSTR' | 3 |
| | p | I didn't **went** there yesterday | 9 |
| | s | *med**nik** vsad**nyj*** for *med**nyj** vsad**nik***<br>'bronze horseman' | 15 |
| | Total = 27 (17%) | | |
| Morpho-phonemic | a | The Central Bureau of St**is**tistics | 14 |
| | p | *ser promocja* ***ser****damer* (handwritten sign)<br>'cheese sale (on) **cheese**damer (for **Ra**damer)' | 14 |
| | s | I had forgot-ø abou**tten** it | 34 |
| | | ***wal****czyć* ***tań****ca* for ***tań****czyć* ***wal****ca* 'dance a waltz' | |
| | Total = 62 (40%) | | |
| Phono-hypo-phonemic | a | ***bł****ugopis* for ***dł****ugopis* 'fountain pen' | 19 |
| | p | *aspekt* ***d****ramatyczny* (*gramatyczny*) 'grammatical aspect' | 16 |
| | | Mary gave the **g**oy a ball | |
| | s | *saletitarny* for *satelitarny* | 10 |
| | Total = 45 (29%) | | |

***Table 1.*** *Summary of timing errors with typical examples*

two. Yet they constitute a majority of the examples gathered. At the semo-lexemic level only spoonerisms were gathered.[7] Only at the phono-hypophonemic level is the number of spoonerisms smaller than each of the other two types.

3.4. DISCUSSION AND SPECULATION. Several questions remain with respect to the data gathered. Consider first why there should be so many spoonerisms relative to the other timing errors. I could speculate that the spoonerisms stood out more to the students, but

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[7] Just before leaving for LACUS, I heard one case of possible semo-lexemic anticipation in a scripted ad recorded by a local (Gainesville, FL) radio host: "[Come visit Dr. X.] **Her** and her staff are ready to serve you." Of course, if *her* is considered an inflection, this could be a lexo-morphemic example. But at the Forum, there was a clear case of semo-lexemic anticipation. In answer to a question Michel Paradis said, "They soon learn that when they hear *depuis* + present in **English** they should use *since* + perfect in English." I polled the audience and only one person, Andrea Mates, said she had noticed the error. I return to the fact that the over 40 other members of the audience did not notice it in section 3.4.

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spoonerisms dominate in the errors I collected as well. Second is whether there is any significance to the numerical discrepancies between the number of errors at different interstratal levels. It is my feeling that there may be some non-obvious factor that lies in the greater structural context (e.g., in the difference between the number of fixed expressions at the different strata) but the research to date does not support any particular answers here. Both these questions require further scrutiny.

As mentioned above, two other kinds of errors showed up in the data: tactic pattern errors and fixed expression errors. Both of these provide evidence for five strata in Polish and English. I do not deal with tactic pattern errors here, but a mention of examples involving fixed expressions in timing errors provides some further insight. The Dell and Reich (1977) examples show exchanges between consonants in the same syllable position. My phonological examples are of that sort, timing errors involving recursion over a generalized syllable structure, though they are not restricted to consonants or onset position. Lexo-morphemic and semo-lexemic timing errors involving fixed expressions show a parallel situation. "I don't want to act like **china** in a **bull** shop," spoken by a Fulbright exchange professor of journalism during the discussion following his presentation, shows a spoonerism in the realization of two lexemes from a fixed expression. The spoonerism is between two nominal positions in a generalized clause structure. Similarly, "For that you'll need the **com**mission of the **per**mittee" (Michael Beschloss on a PBS discussion show), is the inspiration for **Figure 3**. The simple logic of the error is that two prefixes in a generalized derivational structure were involved in a timing error between two successive activations of this structure. Further research must concentrate more on fixed expressions.

One other fact should be mentioned here. Whenever possible, if I note a timing error I poll the others present in the room. In the two examples given above no one else said they had noticed the anomaly. To me, this suggests that the decoding process delinearizes linear speech. The mistaken order of morphemes or lexemes is by itself insufficient to result in confusion, because the linear order, the only thing that is in error, is being eliminated. My inference is that the errors were, in short, corrected in the decoding. This is an inference that should be easy to test.

Finally, another interesting datum would be the percentage of time that speakers who produced such timing errors themselves noted their mistakes and corrected them. This happens fairly frequently, but I suspect that it is not identical to the rate at which others note the errors. I do not see an easy way to test this and welcome suggestions.

4. CONCLUSIONS. What emerges from the data studied are indications only. They do not by themselves rise to the level of proof, but some of them are fairly strong indications. The examples gathered indicate that the linguistic systems of English and Polish are generally as in **Figure 1** with five strata consisting of tactic patterns connected by realizational relations. Step-by-step linearization is provided in the tactic patterns. Possibly all of the linearization, even including the linearization in fixed expressions, is provided there. Some linearization may be provided in the individual storage of the fixed expressions. Even if it is, it can be overridden or ignored in favor of the linear order imposed by the pertinent tactic pattern.

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Conversely, decoding a message from sound involves step-by-step delinearization and the correct understanding of an erroneously-produced text.

I emphasize that there is no indication at all (let alone proof) that tactic pattern generalizations are universal over the native speaker population of a given language or that all native speakers generalize to the same degree. All this is as Lamb observed long ago. There is also no evidence that different languages must have the same number of strata. Henry A. Gleason, Jr., used to say that a natural language must have three strata, but I maintain that there is neither a universal nor fixed number of strata. My evidence suggests that English and Polish have the five strata indicated. It would be interesting to see similar speech error data for Inuit- or Chinese-type languages.

In short, data gathering on speech errors should be much more extensive for the insights it can provide into the structure and operation of linguistic systems, an observation often made by Lamb. The present study is a preliminary attempt to advance that work. Everything herein follows from Lamb's theory of linguistics, both in its structure and its operation. If only relational network linguistics had enjoyed a half century of high numbers of linguistic researchers.

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# LIES AND LYING IN HARD-SCIENCE LINGUISTICS

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**Abstract:** A conventional view of lying focuses on utterances as encoding truth-valued propositions. It requires not only that we know certain observable facts, but also that we have to credit ourselves with the ability to read minds. In this paper we show that a theoretical construct of Hard-science Linguistics (HSL) makes a solution to both of these problems straightforward: the orthoconcept (Yngve 2006 *passim*). From observation we can infer orthoconcepts, which Yngve (2006) has argued are the best way to represent as linguistic properties a person's understanding of his environment. Most of the paper is a brief encapsulation of misstatement vs. lying in HSL.

**Keywords:** lies, lying, truth, hard-science linguistics, human linguistics, orthoconcepts

**Languages:** English

SUPPOSE ABE OWES BETTY MONEY, to be paid by means of a check he will mail to her. A linguist might typically consider a segment of discourse that includes the dialogue in (1).

(1) Betty: Have you sent me that check you owe me?
Abe: The check is in the mail.

Suppose that the check is in the mail. Then, according to a standard account made possible by a truth-valued logic, it might be concluded that Abe has uttered a statement that is propositionally true (Herrick 1994). If, on the other hand, suppose that the check is not in the mail, then it might be concluded that Abe's statement is propositionally false.

So much for the truth and falsehood of the propositions attributed to Abe. How do we know if Abe is lying? Suppose Abe believes the check is in the mail, but his secretary forgot to mail it? (By a commonsense understanding, he is not lying in this case.) Suppose he wanted to withhold the check because his bank account is short on funds, but his secretary, not knowing this, went ahead and sent the check. In this case, Abe believes the check has not yet been mailed, but is saying *The check is in the mail* when in fact it *is* in the mail. (By a commonsense understanding of lying, he is lying this time, albeit not very successfully.)

1. THE PROBLEM WITH LIES AND LYING IN A LOGICAL-DOMAIN ACCOUNT. First order predicate calculus treats claims that are objectively true only as usable statements. 'Belief'

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is not considered to be objectively true since, by definition, it is subjective to the person claiming the belief. Beliefs have always posed a problem for logic. As Hurley puts it:

> The truth value of a compound proposition expressed in terms of one or more logical operators is said to be a *function* of the truth values of its components. This means that the truth value of the compound proposition is completely determined by the truth values of its components. If the truth values of its components are known, then the truth value of the compound proposition can be calculated from the definitions of the logical operators. To point up the significance of this fact we need only note that many compound statements in ordinary language are not truth functional. For example, the statement "Mary believes that Paul is dishonest" is compound because it contains the statement "Paul is dishonest" as a component. Yet the truth value of the compound statement is not determined by the truth value of the component, because Mary's beliefs about Paul are not compelled by any attribute that Paul may or may not possess. (2000:211)

There are logics that try to deal with beliefs but they are not standard. Indeed, such a system is sometimes called a *deviant logic* (Haack 1996:ix).

Logic concerns itself with form. Any truths are assertions made by the logician. Assume that someone makes an assertion. For the purposes of a logical argument, the truth of that assertion is usually said to be based on a state of affairs (e.g., *snow is white* is true if snow is white). Once a statement is reduced to logical form, the truth or falsity of any deductions using the assertion are based on form only. There is no method within logic for determining the objective truth of the assertion. Thus, the assertion is assumed to be truth, but there is no way, within logic, of determining whether the person making the assertion is truthful. As Kegley and Kegley (1978) remind us, logic does not treat with the truth or falsity of statements at all. Logic is concerned with arguments, i.e., the derivation of one statement (conclusion) from a collection of other statements (Kegley & Kegley 1978:34). Seuren (1998:10–18, *passim*) discusses at length the problems of the notion of truth and truth value as relevant to linguistic semantics. We wish to avoid such problems which arise from working within a philosophical framework and therefore need to distinguish between truth (accuracy) and truthfulness. While it might be tempting to appeal to logic for some assistance in the area of our concern here, logic can actually offer us little assistance, since we must analyze how people communicate, not how they assemble arguments.

2. THE REAL WORLD AS CENTRAL TO HARD-SCIENCE LINGUISTICS, NOT AN AFTERTHOUGHT. Traditionally, context has two meanings for linguistics. First, context may mean the association that one linguistic element in an utterance has with other linguistic elements (involving endophoric cases such as references via anaphora and cataphora). The second meaning, exemplified by Austin's work on performative utterances, refers to the real world matrix in which words are purportedly exchanged—such as references to the external world, or exophora (Austin 1962 *passim*). This classic distinction between linguistic and extra-linguistic context can be seen, for example, in Levinson (1983 *passim*), but

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note especially references to "discourse context" (189) or "linguistic context" (191) vs. references to external "context" (22–23). In the first case, questions about the meaning of utterances, etc. are directed to and limited by the language used. In the latter case, context is seen as extra- or non-linguistic. This is because it is something apart from the language, which is taken by assumption to be the object of study. Further, this object of study exists in the logical (rather than physical) domain, and is created by assumption (Yngve 1996:10–13, 32–33 et passim). In short, language is seen as the important and active element of a linguist's concern; anything other than language is treated as either extraneous (of no interest) or marginally important, at best.

In contrast, in Hard-Science Linguistics (HSL), we observe people communicating with each other and model the observation with a **linkage**, i.e., a system that has the theoretical parts necessary to model the people, the objects which effect their linguistic behavior and the surroundings (what some linguists refer to as context—the physical context of the communicative behavior rather than the linguistic context of the utterances). HSL researchers consider that objects, energy flows, and the like may have a very definite effect on the communicative behavior of people. A simple example is the way in which people in a conversation refer to an object which is present (in the surroundings) as opposed to how they refer to objects which are not present.

In a typical theoretical linguistic analysis, a discourse such as (1) would be analyzed in terms of morphemes, lexemes, syntax, and semantics, and only then would real-world factors would be taken into consideration as extra-linguistic. In HSL, however, we would observe, within a particular environment, Betty and Abe communicating about an object, a check (and the relevant property of its whereabouts—whether it is in the mail or not).

3. EXAMINING A SPECIFIC CASE IN DETAIL. Abe and Betty are in conversation about a check (2)a. We represent this as a linkage [checkConversation] which includes the participants [Abe] and [Betty] and the prop [check]. Thus, the participants and the prop are our theoretical constructs by which we represent the real people and the relevant object that they are communicating about. Betty asks Abe if he has sent the check (2)b.

(2) a. [checkConversation] = [Abe] + [Betty] + [check]
b. [Betty]<askCheckStatus> = <emit sound of / *Have you sent me that check you owe me?*>
c. [Abe]<stateCheckStatus> = <emit sound of / *The check is in the mail.*>

Here (2)b is a procedural property of [Betty]; it represents the event of Betty speaking via changes in her real-world properties. The event causes kinetic energy (sound waves) to flow from Betty to Abe. We could represent this energy flow in HSL as a channel, and we could represent the procedural properties in [Abe] showing how it affects him, but for now, we can put aside that level of detail. Abe responds to Betty by telling her the check is in the mail (2)c. Here (2)c is a procedural property of [Abe] by which we represent Abe speaking. Again, we could represent the resulting energy flow from Abe to Betty and its effect on [Betty], but will put that aside as not central to what we are trying to show here.

Abe is accurately reporting the status of the check if the check really is in the mail (3)a. But Abe is inaccurately reporting the status of the check if it is not in the mail (3)b.

(3) a. [check]<in the mail>
b. [check]<~in the mail>

We need to be careful not to confuse being true and being truthful. The first is in an everyday (non-technical) sense understood as being a property of an utterance or proposition, the second, as being a property of a person.

To avoid domain confusions involving logical-domain entities like utterances and physical-domain entities, we will choose our terms carefully. Recall that we have real-world things and events from which we abstract models. The prop [check] is our model in HSL of a real-world object, a check. If the real check is in the mail, then we can accurately describe it via a model [check] with a property which has two possible values <in the mail> and <~in the mail>. If the check really is in the mail, we would accurately represent it via [check]<in the mail>. Representing it as [check]<~in the mail> would be inaccurate under the same condition.

We can also represent truthfulness in HSL, and we find that that the everyday understanding of truthfulness (being truthful vs. lying) can be described in terms of properties of people.

4. ORTHOCONCEPTS AND PEOPLE COMMUNICATING. Orthoconcepts are real-world properties of a person communicating, which

> form in the observing role part of an observer.… [They] are not freestanding abstractions. Orthoconcepts are properties in a theory of a real observer that model a physical reality and require an observer in which to form (Yngve 2006:268).

In this paper, we show how orthoconcepts are central to an adequate description of lies and lying in a theory of people communicating.

In addition to modeling a person as a participant in a particular linkage, we can model him as a participant in an observing linkage, one in which he is an observer of the linkage in which he is taking part. For example, (2)a shows [Abe] and [Betty] as participants in the [checkConversation] linkage. This linkage also contains a prop, [check]. The check has a property <in the mail> which has the possible values <in the mail> and <~in the mail>. In addition, however, both [Abe] and [Betty] are observers of the [checkConversation] linkage. We can represent what is happening partly in terms of two observer linkages, [checkConvObs$_1$] and [checkConvObs$_2$]; see (4)a–b. Within [checkConvObs$_1$], for example, we model [Abe] as having a property [Abe]<[check]<~in the mail>> (we always label an orthoconcept starting with the name of the system it is a property of, for clarity in this case, [Abe]). This orthoconcept is a model of Abe's understanding that the check is not in the mail. Within [checkConvObs$_2$], the linkage in which Betty is the observer, we assign [Betty] the property [Betty]<[check]<in the mail>> to stand for her understanding

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that the check is in the mail. In this way, we can represent via an orthoconcept a real-world property that in some ways corresponds to a philosophical construct of belief, but one which we can ultimately verify based on the behavior of the people communicating, not merely on intuition.

In addition to being an observer of the linkage [checkConversation], [Abe] is also an observer of Betty observing [checkConversation], and vice versa. The observing linkage [ObsObs$_1$] models Abe observing Betty, and the separate observing linkage [ObsObs$_2$] models Betty observing Abe.

(4) a. [checkConvObs$_1$] = [Abe] + [checkConversation]
b. [checkConvObs$_2$] = [Betty] + [checkConversation]
c. [ObsObs$_1$] = [Abe] + [checkConvObs$_2$]
d. [ObsObs$_2$] = [Betty] + [checkConvObs$_1$]

(5) a. [check]<~in the mail>
b. [Abe]<[check]<~in the mail>>
c. [Abe]<[Betty]<[check]<in the mail>>>

Thus, we can compare, for example, our models of properties representing the real state of the check (5)a, Abe's understanding of the state of that check in his observing linkage [checkConvObs$_1$] (5)b, and Abe's understanding of Betty's understanding of the state of the check in the linkage in which he is observing her observing linkage [ObsObs$_1$] (5)c.

5. LYING VS. BEING MISTAKEN. If the check is in not the mail, and Abe has an orthoconcept of the check as not in the mail, but he expects Betty to have an orthoconcept of the check being in the mail, then he is lying (5)a–c. (This is equivalent to saying that after Abe speaks, Abe's orthoconcept of Betty is of Betty having an orthoconcept of the check being in the mail.)

Betty's actual understanding has nothing to do with whether Abe is lying or not. Whether she believes the lie (6) or detects that he is lying (7)a–c he is still lying. In (6), we represent Betty's understanding of the state of the check via the value of the property associated with the orthoconcept of the prop [check] in [Betty]; in (6) we represent Betty having been fooled by Abe. In (7), we represent Betty's realization that Abe is lying via three key properties of [Betty]: (7)a represents Betty's understanding that the check is not in the mail; (7)b represents her understanding that Abe also understands the check is not in the mail; and (7)c represents Betty's understanding of Abe's expectation that he has fooled her into thinking that the check is in the mail.[1] The difference between the conditions represented by (6) and (7) is not whether Abe has lied, but whether he is a successful liar—in (6), he is, while in (7), he is not.

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[1] While some researchers in AI have claimed that this leads to an intractable problem of infinite regress, this is simply not the case. For one thing, it is hard to imagine how working memory could deal with even what would be going on in what we would model as an observing linkage of an observing linkage of an observing linkage.

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(6) [Betty]<[check]<in the mail>>

(7) a. [Betty]<[check]<~in the mail>>
b. [Betty]<[Abe]<[check]<~in the mail>>>
c. [Betty]<[Abe]<[Betty]<[check]<in the mail>>>>

If the check is not in the mail (8)a, but Abe has an orthoconcept of the check as in the mail (8)b, and he understands Betty to have an orthoconcept of the check being in the mail (8)c, then he is merely mistaken, even though his belief (8)b and hers (8)d are both inaccurate—i.e., (8)b and (8)d are in conflict with (8)a.

(8) a. [check]<~in the mail>
b. [Abe]<[check]<in the mail>>
c. [Abe]<[Betty]<[check]<in the mail>>>
d. [Betty]<[check]<in the mail>>

The above is the simple case of lying (successfully or unsuccessfully) vs. being mistaken.

6. SARCASM AND IRONY: TRUTHFUL LYING AND LYING BY TELLING THE TRUTH. Next, let's suppose that [Abe] says, *The check is in the mail*, but he does so grinning and rolling his eyes, with the expectation that Betty will know he is kidding. In this case, he is not lying. Because those following a traditional view see Abe as having uttered the proposition *The check is in the mail*, they have what appears to be an intractable problem. Abe has uttered a false proposition, yet has honest (if goofy) intentions. Somehow, they have to explain how the hearer changes the proposition *The check is in the mail* into its negative, *The check is **not** in the mail*. In HSL, we can represent the situation as in (9)a–d. We call this truthful lying.

(9) a. [check]<~in the mail>
b. [Abe]<[check]<~in the mail>>
c. [Abe]<stateCheckStatus> = <emit sound of / *The check is in the mail*> + <roll eyes> + <grin>
d. [Abe]<[Betty]<[check]<~in the mail>>>

If Betty understands the check is not really in the mail (10), his kidding was successful; if, however, she doesn't get the joke and believes—for the time being—that the check is in the mail (6), then his joke backfires. She will later (inaccurately!) believe he was lying—just as in (7), above—even though he was actually just kidding around. Betty has not detected Abe's expectation that Betty would understand his statement as false.

(10) [Betty]<[check]<~in the mail>>

Now let's suppose Abe has not sent the check, but says, *You know me… completely irresponsible… I didn't send the check yet*. Let's suppose he says this expecting Betty to interpret what

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he says as kidding, so that she will think he really has sent the check. This presents the complementary problem for those with a traditional view of utterances and truth values. In a traditional logical-domain / mixed-domain view, Abe has uttered a false proposition, yet he expects the hearer to believe it is true. This is (11)a–d.

(11) a. [check]<~in the mail>
b. [Abe]<[check]<~in the mail>>
c. [Abe]<stateCheckStatus> = <emit sound of / *You know me… completely irresponsible… I didn't send the check yet*> + <roll eyes> + <grin>
d. [Abe]<[Betty]<[check]<in the mail>>>

Since Abe expects Betty to believe something different about the state of the check (11)d from what he believes to be the case about it (11)b, he is in this case lying. We call this lying by telling the truth.

Now, let's suppose that everything in (11)b–d still holds, but unknown to Abe, his secretary has already mailed the check to Betty—it is in the mail; i.e., we have (3), instead of (11) a. This would just make Abe's belief (11)b inaccurate; he would still be lying, because he in this case also expects to cause Betty to have a belief (11)d about the check that is different from his own (11)b.

7. CONCLUDING REMARKS. In short, we can describe the accuracy (vs. inaccuracy) of a person's understanding in terms of the correspondence between an orthoconcept and whatever the orthoconcept relates to. We can describe truthfulness (vs. lying) as a property of a person in terms of his orthoconcept and the expectation he has of the effect of his communicative behavior on the corresponding orthoconcept in another person. When truthful, he expects the hearer to have an orthoconcept that corresponds to his own; when lying, he expects it to differ in a certain way. We must describe the success of communication differently for a person who is being truthful vs. one who is lying. The person who is being truthful (as opposed to lying) communicates successfully when he causes the orthoconcept of the hearer to correspond to his own.

The person who is lying is successful when he causes the orthoconcept of the hearer to correspond to his expectation of an orthoconcept of the hearer, and when that orthoconcept of the hearer does not correspond with his own.[2]

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[2] What a person says can be modelled as true or false regardless of whoever lese may be present, or even *whether* anyone else is present. This is because truth depends on the correspondence between a description and the real-world thing being described (Emmet 1981:9ff.). In contrast, truthfulness (or lying) cannot be modelled within one person because it is inherently a social act. It requires not only that we model a person's understanding of the immediate real-world state of affairs, but that we also model their understanding of another person's understanding of the real world. Winograd and Flores (1986:123–24) discuss what it means to understand as a human does and why a computer cannot really be said to understand. Analogous arguments apply to why one cannot lie to a computer or an answering machine, for example.

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# DOES A BEHAVIORAL EXPERIMENT ON REASONING SUPPORT THE NEUROLOGICAL FINDINGS?

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**Abstract:** To better understand the development and cognitive architecture of human reasoning, a divide between deductive and probabilistic reasoning has often been proposed. Neurological studies carried out on clinical and typical populations have overwhelmingly found that the two proposed types of reasoning are underpinned by relatively independent neural substrates. This article seeks to determine through behavioral experiment whether the two alleged reasoning types have similar or different developmental trajectories with the notion that similar trajectories would question these findings while different trajectories would support the idea of separate systems. An experiment was carried out on children from age 4 to 14 requiring them to choose whether a given conclusion was *certain* or merely *likely* to be true or untrue. Results showed significantly different development trajectories between deductive and probabilistic reasoning, thereby supporting the neurological studies' findings of separate systems. Further results allow hypotheses on the nature of interplay between these systems.

**Keywords:** pragmatics, reasoning, logic, deduction, probabilistic reasoning, cognitive architecture

**Languages**: English

AS THE TOOLS OF NEUROSCIENCE advance our efforts to understand the nature of human cognitive activities such as language processing and reasoning, it becomes possible to compare information gleaned from these tools with the findings from behavioral studies. This action allows us the opportunity to examine specific human activities from more than one vantage point and also to more closely examine the tools we are using and the way which we are using them when the two vantage points report contradictory findings.

This paper looks at the activity of human reasoning. As reasoning is a term that is both controversial to define and difficult to exhaust, the topic here is limited to a particular area or possibly two particular *areas* of reasoning, these being *deductive* and *probabilistic* reasoning. This last sentence is carefully worded, as the question under consideration here is whether there is a distinction between these alleged areas of reasoning or whether they are actually one and the same. When we speak of a distinction being made between these two

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areas of activity, ultimately what we mean is whether on a cognitive or psychological map, it would be correct to say that these are separate areas that function in different ways or on different types of input and that might develop separately and possibly be able to function independently of one another in the same way that our perceptual systems of vision and audition do. Therefore, the question is posed at a psychological level, but of course this psychological level is one that is impossible to see. One might even say that the psychological level doesn't truly exist, but is merely a useful mental construct that makes it easier for us to imagine the workings of the mind. Whether this is the case is beyond the scope of this paper, but the level of psychological mechanisms is kept here as at least a useful tool for thinking. However, as the clear impossibility of directly examining this level persists, we must turn to other more tangible levels which can be observed and which thereby allow us to make educated guesses in regard to the nature of our psychological mechanisms. These other levels consist of the *neurological* and the *behavioral* levels. If evidence from both of these levels coincide, we can have greater confidence in the resulting implications on the psychological level which is sandwiched between the two others.

Before considering the neurological evidence in the area, we will first present definitions and examples of the two proposed types of reasoning and the theories supporting the number and type of mechanisms carrying out reasoning activities. Reasoning, an important topic in the area of pragmatics, is taken to be the ability to draw a conclusion based on given information. This very general definition can now be broken into two categories. One of these is the category of deductive reasoning. An example of this is provided in (1) in the form of a classic syllogism with its major and minor premises.

(1) All cars have wheels.
This big piece of metal is a car.
Therefore, this big piece of metal has wheels.

What is specific to this form is that the conclusion that is drawn is necessarily true as long as the premises are true, due to the form of the argument. Deduction, however, isn't limited to this classic form. It is also present in shorter sequences such as in (2):

(2) Daniel is staying at home all evening tonight.
Therefore, Daniel will not be at the cinema on Main Street tonight.

Probabilistic reasoning, on the other hand, does not have the quality of assuring the truth of its conclusion, even if the premises are known to be true. An example follows in (3):

(3) There is an opera on campus tonight.
Daniel hates the opera.
Daniel won't be attending the opera tonight.

In this case, even if it's true that Daniel hates the opera, there's still the possibility that he will be there due to any variety of circumstances, such as getting much-needed extra credit for

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his music class or being taken there against his will. The conclusion is based on probability as opposed to certainty, as the form of the argument does not guarantee its conclusion.

Two main psychological models of reasoning in this area have been put forward using these categories of reasoning. The first can be referred to as Mental Logic Theory (Boole 1848, Braine 1978, Henle 1962, Rips 1994, 2001, Rock 1977), which asserts that there are at least two separate mechanisms which carry out reasoning. The second is Mental Model Theory (Johnson-Laird & Byrne 1991), which claims that there is a single mechanism responsible for processing both types.

Mental Model Theory asserts that the single mechanism which can carry out both deductive and probabilistic reasoning works by constructing as many mental models of the premises as possible, possibly in pictorial form. A potential conclusion is inserted into each mental model and evaluated for its ability to be true in the models. If the conclusion fits into each model without contradiction, the conclusion is considered to be true, whereas if it fits into most, but not all of the mental models, the conclusion is then considered to be probable.

The opposing Mental Logic Theory proposes that we have a set of mental inference rules such as *modus ponens* (If A, then B. A. / Therefore B) which we can apply to propositions in order to move logically from premises to conclusions. Descriptions of the precise rules held and the way they are used vary from author to author but all agree on the overall separation from probabilistic reasoning and the use of inference rules. The workings of a probabilistic system are mainly of interest in the sense that they are *separate*, as they cannot be carried out by the deductive system.

As stated earlier, observing neurological activity can help researchers to understand whether two proposed activities activate the same or different neural correlates in the brain. If identical brain areas are used in carrying out the tasks, it seems likely that the two tasks are actually one and the same task, whereas if separate areas are used in the tasks, it provides strong support for the notion that the two activities in question are actually different.

Although much neurological experimentation has been carried out in various areas of reasoning and areas related to it, this literature review will limit itself to the experiments which directly compare deductive and probabilistic reasoning. Goel et al. (1997), using PET brain imaging on healthy, adults found both types of reasoning to be carried out in the left prefrontal cortex but in different areas of it, leading the authors to state that different neural networks existed for each type of reasoning. These findings were echoed by Osherson et al. (1998), whose PET study also found differences in brain activity to exist between deductive and probabilistic tasks, although they found the former to exist primarily in the right hemisphere and the latter to exist bilaterally.

Parsons and Osherson's PET study (2001) had locational findings similar to those of Osherson et al., and Goel and Dolan's (2004) fMRI study showed separate areas of the left hemisphere to be active in the respective tasks. A final EEG study by Tommerdahl et al. (2005) further confirmed the results of earlier neurological analyses, showing deductive activity to be concentrated in the frontal lobe while probabilistic reasoning activity was more evenly spread throughout the cortex. When viewed as an amalgamation, the results found are interesting. Overall, different studies name varying areas as the seat of each type

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of reasoning, but at the same time, each and every study concurs that clear separations exist between the neurological activity underlying each type of reasoning. The remaining questions about location make it clear that methodological difficulties in the exploration of this question exist, but despite this fact, the overall weight of neurological evidence supports the Mental Logic Theory over the Mental Model Theory.

Interestingly, researchers from both the Mental Logic and Mental Model camps have continuing neuroscientific research asserting to find further separations between reasoning and other functions such as mathematical processing (Kroger et al. 2008) and language (Monti et al. 2007). The number and variety of these studies, however, precludes inclusion in this review.

The aim of this article was to carry out a behavioral experiment using the two proposed types of reasoning in order to determine whether the two types of reasoning developed in the same timeframe. The underlying idea was that if the two types of reasoning developed at the same age and rate, it would support (but not prove) the notion of Mental Model Theory, which states that there is a single mechanism for both types of reasoning. If, on the other hand, it was found that the two types of reasoning emerged at different stages of development or developed at different rates, this would strongly support the Mental Logic Theory and the notion that separate mental mechanisms support these two distinct types of reasoning.

## 1. METHODS.

1.1. SUBJECTS. 60 children (23 boys and 37 girls) between 4 and 14 years of age were tested. This group was composed of 10 children from each of the following ages (4, 6, 8, 10, 12, and 14), and they were recruited from a variety of schools in the centre of England. None of the children had statements of Special Education Needs and consent was given by both their teachers and their parents.

1.2. MATERIALS AND PROCEDURES. Each child was shown a series of 30 pictures. While showing a picture, the researcher read one or two premises which related to the picture followed by two or three questions. Each question was a proposed conclusion to the premises and the child responded via a manual system whether they thought the conclusion was true, false, likely, unlikely or whether they had no leaning either way. 70 questions were asked in total with 30 of them representing a deductively valid answer in which the application of modus ponens would be appropriate, 30 representing what was estimated to be a highly probable or improbable conclusion and another 10 designed to elicit the control response of “no leaning either way”.

In order to allow children as young as four years of age to participate in the study, it was predicted that verbal responses based on a choice of five would be overly taxing to working memory, thereby making the testing procedure impossible. In order to remedy this, a special tool, shown in **Figure 1**, was designed to support the children. It consisted of a long, thin piece of wood akin to a very wide ruler which had five shallow cups attached to it. Alongside this tool was a plastified strip with a character alongside each choice with physical expressions ranging from a big smile and thumbs up to represent the “yes” answer

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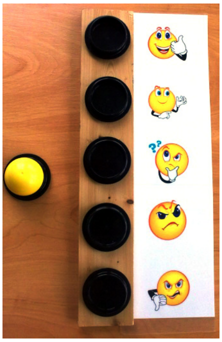

***Figure 1.*** *Response tool.*

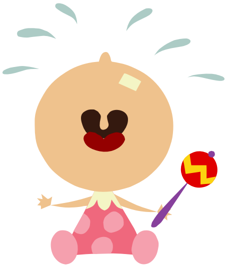

***Figure 2.*** *Example of testing material.*

down to a grimacing face with thumbs down to represent a "no" response. These images served as an aide-memoire regarding which hole represented which answer. The children answered each question by placing a ball into one of the five holes.

Each child was given a series of practice questions and all succeeded in showing that they understood the difference between the different response types. Occasionally a child would respond verbally with one answer and represent another answer with the ball. In these few cases, the contradiction would be pointed out to the child and they would be asked to place the ball in the hole that best answered the question. Children were also encouraged to ask for the instructions to be repeated at any point if they forgot which hole represented which answer, but this was only requested on a single occasion.

An example of the testing material follows. In this example, the image shown in **Figure 2** was shown and the premises in (4) were read aloud by the researcher.

(4) If the baby cries, her face will get wet.
The baby cries.

The possible conclusions put to each child are in (5).

(5) Is her face dry?
Is the baby happy?

| Age | Deductive |  | Probabilistic |  | *p* |
|---|---|---|---|---|---|
|  | Mean | Std. Dev. | Mean | Std. Dev. |  |
| 4 | 15.2 | 5.43 | 5.00 | 4.83 | .005 |
| 6 | 16.8 | 4.13 | 4.40 | 8.02 | .001 |
| 8 | 12.7 | 7.45 | 5.11 | 3.59 | .045 |
| 10 | 9.0 | 7.49 | 10.0 | 7.24 | .826 |
| 12 | 13.6 | 9.19 | 10.8 | 5.01 | .460 |
| 14 | 7.9 | 5.92 | 15.9 | 4.98 | .000 |

***Table 1.*** *Mean deductive and probabilistic scores.*

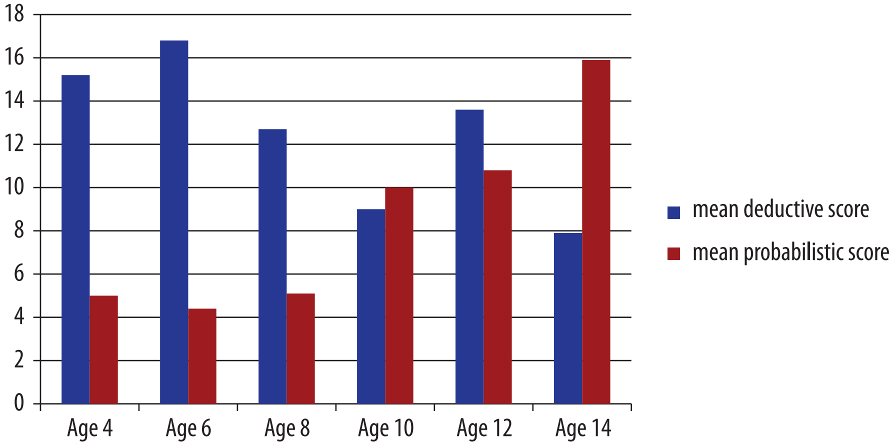

***Figure 3.*** *Mean deductive and probabilistic scores in graphical form.*

The first of these questions has a deductively valid answer of "no". The second question, to the contrary, has no deductively valid answer but was designed to trigger the response of "probably not", the fourth hole from the top on the answering tool.

Two researchers were present at all times with one showing the pictures and reading the sentences and the other recording the responses.

2. RESULTS. The results presented in **Table 1** and shown graphically in **Figure 3** clearly indicate significantly higher scores in deductive scores up until the age of 10. By age 10 the scores in the two categories have evened out and by age 14 the scores have significantly reversed. No significant differences based on gender were found.

3. DISCUSSION. The results depict a clear trend that is made up of markedly high deductive scores and low probabilistic scores from ages 4 until 8. Statistical analysis shows a significant difference to exist between the two scores throughout this age range. By the age of 10, the scores are more evenly matched and this result is still present at age 12. However, by age

14 a significant difference again exists between the two scores but in the opposite direction. At this age, probabilistic reasoning scores overtake the deductive scores.

What is interesting to note is the fact that the deductive scores do not present an expected learning trajectory that starts low and then increases. Instead, it begins nearly at the highest point it will reach throughout this study and then decreases as probabilistic scores rise. It is important to keep in mind that the test was designed in such a manner that an increase in one score did not lead to an automatic decrease in another score. Twenty questions of each of these two types were present in the test and it was theoretically possible to gain a full score of 20 in each of these categories simultaneously. The results from this study seem to indicate that probabilistic reasoning skills develop in an inverse relationship to deductive skills. One can now clearly see that not only do the two types of reasoning have markedly different trajectories, but that it is possible to speculate about the nature of the cognitive architecture that may underlie reasoning which follows here.

What the relationship between the scores appears to suggest is a dual route theory of reasoning where the mechanism responsible for deductive reasoning, at least the basic *modus ponens*, develops at a relatively early age whereas a probabilistic mechanism develops somewhere after the age of 8. The later developing mechanism of probabilistic reasoning enters into a relationship of competition with the deductive mechanism and tends to dampen the working of the deductive mechanism, even when this mechanism is the more appropriate one.

A similar outcome has been seen in what may be found to be an analogous area of scalar implicature. Scalar implicature is the area of pragmatics where the processing of explicit linguistic meaning is set into contrast with a proposition's implicit, pragmatic meaning. An example would be the proposition in (6).

(6) Michelle has two children.

An explicit linguistic analysis of this proposition would make it possible to conclude that it is possible that Michelle has more than two children and having two of something doesn't preclude the possibility that more than two are possessed. A pragmatic analysis of the proposition however leads the listener to assume that Michelle has two and only two children. This is based on the assumption that the speaker wouldn't say that Michelle had two children if she actually had more than two. A series of experiments carried out by Noveck (2001) show that children are more accepting of the purely linguistic interpretations compared to adults and that between groups of children aged 5, 7, and 9, the 7 year olds were the most likely to accept these linguistic, logical interpretations. This links closely to the 6 year olds in the present study, who were the most likely to use deductive reasoning when appropriate.

What is made very clear in this study's results is that the two skills have markedly different trajectories, with the logical skill of applying *modus ponens* highly developed by the age of 4. Scores of probabilistic reasoning, on the other hand, don't surpass chance until the age of 10. A possible reason for this is that while the deductive system is based upon a small set of rules that are applied to language, the probabilistic system is dependent upon world knowledge and life experience, which requires the first decade of life to function sufficiently. The application of world knowledge to a variety of hypothetical situations may well require a knowledge of probability developed through several years of experience. It is also possible that a probabilistic mechanism works in the way described by Mental Model Theory, where working memory has to develop to a certain capacity to allow appropriate functioning. Regardless of how the systems work, it seems clear that the trajectories of development of the two types of reasoning are substantially different and therefore support the notion of Mental Logic that claims that at least two different mechanisms are at work in reasoning. Furthermore, this evidence coincides with the neural evidence stating that individualized neural mechanisms support various types of reasoning.

Not only are these results of interest to psychologists attempting to build a model of human cognition, but also to educators considering questions of what types of learning might be dependent upon the systems described above. These results also raise questions for the anthropologist and philosopher regarding society's role in the very existence and development of these cognitive systems. Answers to the question of how we reason have extensive effects on a large number of disciplines and to both theoretical and practical areas of interest.

An unfortunate limitation of the study is that the youngest children studied were four years old and already performing well above chance in deduction. We therefore failed to observe deductive reasoning in its early stages of development. In order to capture the onset of deductive reasoning, it is likely that other tools such as observation will be more successful than the methods used here. Further limitations of this study include several aspects that could be built into future studies, such as repeating the test on progressively older adolescents and adults until the levels of both reasoning scores reach a plateau. This is vital, considering that scores are still possibly in flux at our highest testing age. Further studies could also divide deductive reasoning into more subtypes than modus ponens in order to see whether given rules appear at the same age. The examination of different cultures and of atypical populations, such as children and adults on the autistic spectrum, would also be of interest in the development of the field.

Moreover, all of these areas of continued testing are possible in both the neurological and behavioral fields, allowing for a degree of rigour which can be difficult to achieve in fields of high level cognition such as pragmatic analyses.

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# SYNTAX AND ENGLISH LANGUAGE ACQUISITION

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**Abstract:** This article reports on efforts to engineer and administer a 60-item elicited imitation (EI) test to English language learners at BYU's English Language Center (ELC). The test focused strictly on tense, aspect, and 3rd and 1st person singular, and we maintained strict specifications for all items including: syllable length, lexical complexity, and clauses. We scored these tests using a 0–4 score system and then used a stepwise linear regression model to analyze which test features were most difficult for our overall population. Following that analysis we used an adjusted r-square model to control for sentence length in order to look at which features were most problematic for each predetermined language learning level within our study.

**Keywords:** Language testing, language acquisition, syntax, morphology, elicited imitation

**Languages:** English

ELICITED IMITATION (EI) IS A TESTING METHOD originally used in the 1960s and 70s to assess children's understanding of their first language (Menyuk 1963:429–39; Ervin-Tripp 1964:163–89). However, in recent times, EI has developed into a testing method for second language learning assessment (Erlam 2006:464–91). The theory behind EI is that when people hear an utterance, they can only reproduce the utterance if they understand the syntax and morphology of that utterance. When people hear a string of words they form a cognitive representation and then produce a string of words according to that representation (Bley-Vroman & Chaudron 1994:245–61). Researchers have conducted various studies with EI where they have recorded an item (sentence), had a subject listen to that item, and then asked the subject to repeat that item (Vinther 2002:54–73; Bley-Vroman & Chaudron 1994:245–61). Though EI is not the most precise language testing tool for assessing second language learners, currently accepted methods of language acquisition testing—specifically the oral proficiency interview (OPI)—have produced test results that are so broadly defined that learner progress over time is difficult to determine. These testing methods are also very expensive and can only be administered by specially trained professionals.

The Brigham Young Pedagogical Software and Speech Technology (PSST) Research Group has designed seven different EI test forms and administered those tests to 1,279 subjects over the last four years. Each test form focused on different features thought to be valuable in English as a second language (ESL) learning, such as lexical density, phrase

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structure, and tense. However, because of the magnitude of the features in some of these tests, some tests assessing over 40 features, it became difficult to determine the degree of effect that specific features had on the data. Because of observable syntactic and morphological mistakes widely made by ESL learners, we investigated the degree of significance that tense and aspect have upon ESL learning. The work of Goldschneider and DeKeyser (2005:27–66) inspired the development of a form exclusively focused on the features of tense, aspect, 1st person singular, and 3rd person singular. In this article we examine which of these morphosyntactic features are most difficult for English language learners overall and which features are most difficult for different language learners, where difficulty refers to features that influenced test performance on our EI test most significantly.

1. TEST DESIGN. We carefully engineered a test that comprised 60 items (sentences), delineated by five sentence lengths: 6, 9, 12, 15, and 18 syllables. Because we specifically focused our test on tense, aspect, and 3rd and 1st person singular (features) (Goldschneider & DeKeyser 2005:27–66), we evenly distributed these features among the respective sentence lengths, as seen in (1).

(1) a. 6 Syllables: He is going home too.
b. 9 Syllables: Some young people were buying nice homes.
c. 12 Syllables: The minister has spoken in that church each year.
d. 15 syllables: The present director had been writing a new proposal.
e. 18 Syllables: New companies will be developing necessary financial lists.

In order to avoid compounding our variables, we stringently controlled for extraneous morphosyntactic features that were not specifically being measured. We selected the lemmas for our sentences using the first thousand lemmas from Kilgarriff's (1997:135–155) lemmatized frequency list created from the British National Corpus. We limited the use of prepositions to *on* and *in,* which are two of the earliest acquired prepositions (Romaine 1995:221) and limited our modals to *will* to indicate future time. We excluded all questions, all *wh-* question words (Dulay, Burt & Krashen 1982:200–31), and *do*-insertion because of their added structural complexity. We also included no compound or complex sentences in order to control for the added difficulty of more complicated syntactic patterns.

We administered our test to 189 subjects via a computerized language assessment tool at the English Language Center (ELC) on the BYU campus. The ELC used a placement system to determine the language level of each student just prior to the administration of our test—level 1 being beginning level students and level 5 being advanced students. We referred to this placement system in our study when analyzing the language abilities for students at each language learning level.

2. ITEM EVALUATION. We used a 4 score evaluation system—based on the work of Chaudron, Prior, and Kozok (2005)—to evaluate the EI test responses. Several expert human graders were used to evaluate the accuracy of the items. Lonsdale et al. (2009:159) provided evidence that there is little difference between a 4 score evaluation and a syllable

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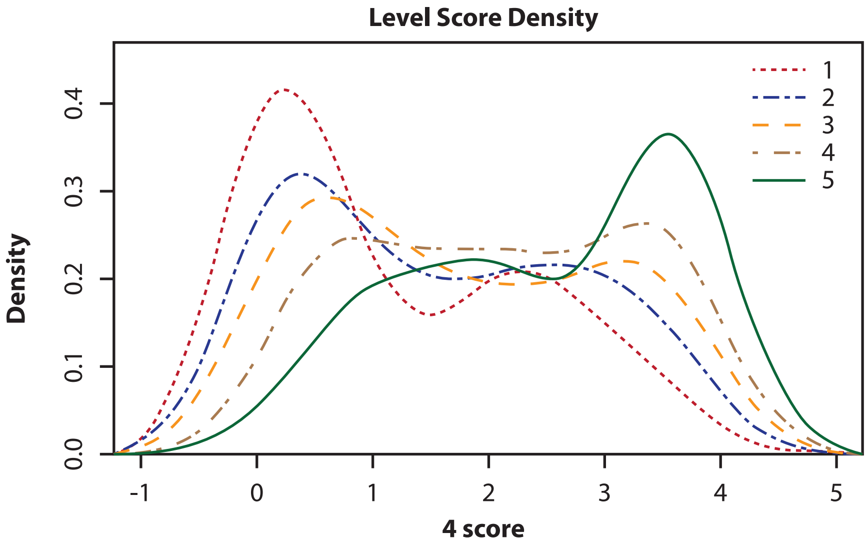

***Figure 1.** Level score density of items per learning level according to the 4 score evaluation.*

percentage score. Because of the lack of difference between the two evaluation systems and the relative ease of analysis provided by the 4 score evaluation, we elected to evaluate our data based on this system. That is, we first used a binary system to mark each syllable correct (1) or incorrect (0), based on whether or not the subject accurately reproduced that syllable. For each error we deducted a point. An item with 4 or more errors received a score of 0.

3. INITIAL RESULTS. To obtain our initial results we employed a stepwise linear regression model, which is a syntactic model that allows researchers to analyze the effect that independent variables have on the dependent variable. Overall results indicated that syllable length was the most statistically significant feature for every level, as expected, accounting for 80% of the variance (using the adjusted r-squared model, which is a model that allows researchers to analyze the combined effect of the independent variables on the dependent variable). The density of scores (highest concentration of scores) for each level followed as expected, with level 1 students having the greatest score density at zero and level 5 students having the greatest score density at and around 4, as illustrated by **Figure 1.** The differences illustrated by **Figure 1**—which have been normalized to compare relative densities of the language levels within the population—indicated that our test could differentiate between subjects of varying language abilities even with sentence length being a predominant feature.

There was a gradual progression in performance from level 1 to level 5. As illustrated in **Table 1** (overleaf), subject performance for each sentence length increased based on the language learning level of the subjects. For every language learning level there was a significant drop in performance for longer sentence length; subjects at all levels performed best on the 6 syllable sentences and worst on the 18 syllable sentences.

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| Syllables | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|---|---|---|---|---|---|
| 6 | 2.87 | 3.16 | 3.34 | 3.53 | 3.74 |
| 9 | 1.77 | 2.35 | 2.64 | 2.97 | 3.45 |
| 12 | 0.88 | 1.44 | 1.62 | 2.16 | 2.74 |
| 15 | 0.32 | 0.51 | 0.74 | 1.1 | 1.37 |
| 18 | 0.05 | 0.23 | 0.42 | 0.73 | 1.3 |

***Table 1.*** *4 score averages for each level across syllable lengths.*

| | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|---|---|---|---|---|---|
| **3rd Person** | 0.0084 | 0.0277 | 0.0078 | 0.0059 | 0.0319 |
| **1st Person** | 0.0052 | 0.0073 | 0.0041 | 0.0059 | 0.0174 |
| **Present tense** | 0.0589 | 0.0864 | 0.0555 | 0.0541 | 0.1487 |

***Table 2.*** *Overall statistically significant features based on p-values.*

Aside from sentence length, there were other features that proved significant for our overall population. According to the p-values calculated through our stepwise linear regression, we found that 3rd and 1st person singular features were significant, with p-values less than .05 (as illustrated in **Table 2).** Present tense also approached significance for all levels.

4. FURTHER ANALYSIS. Our initial analysis did not indicate that different features were problematic at each learning level across individuals; the features we identified in **Table 2** were problematic features for our entire population, regardless of subjects' learning levels. However, when we controlled for the sentence length variable in our stepwise linear regression model we found that different features were more salient for different sentence lengths. We utilized this stepwise linear regression model to analyze variables individually in order to determine whether they were statistically significant. The salience of these features also varied for levels 1–5 within each sentence length. We used the adjusted r-squared measure—which accounted for the amount of variance of a feature for the results in the sample—to determine which features were most salient for these specific language levels.

In order to illustrate this point, we highlight two sentence lengths: the 6 syllable sentence length and the 12 syllable sentence length. For our 6 syllable sentences, we found that present tense and progressive aspect were problematic features for every language level. However, there were other features that accounted for the variance of specific language levels. In **Table 3** we see that in addition to present tense and progressive aspect, in level 1 simple tense also accounted for variance in the sample; in level 2 simple tense and perfective aspect also accounted for variance; and in levels 3 and 4 past and simple tense accounted for additional variance in the sample. The adjusted r-squared values for this sample indicated that these features accounted for 39.5% to 59.6% of the variance for the 6 syllable sentence length.

| Level | Features | Adjusted r-squared |
|---|---|---|
| 1 | present, simple, progressive | 0.395 |
| 2 | present, simple, progressive, perfect | 0.590 |
| 3 | present, past, simple, progressive | 0.471 |
| 4 | present, past, simple progressive | 0.596 |
| 5 | present, progressive | 0.313 |

***Table 3.*** *6 syllable sentence length variance across language levels.*

| Level | Features | Adjusted r-squared |
|---|---|---|
| 1 | past, progressive, 3rd person | 0.587 |
| 2 | present, past | 0.566 |
| 3 | past, progressive | 0.682 |
| 4 | past, progressive | 0.541 |
| 5 | present, past, progressive | 0.660 |

***Table 4.*** *12 syllable sentence length variance across language levels.*

In our 12 syllable sentences we found that the morphosyntactic features analyzed accounted for considerably more of the variance than with the 6 syllable sentences, amounting to 54.1% to 68.2% of the variance, depending on the language level. Again, different features accounted for the variance within the individual language levels, as shown in **Table 4**. We found that past tense was the only feature that accounts for variance in every language level. Again, additional features were important for the various levels, as indicated in **Table 3.**

We found that the longer sentence lengths—15 and 18 syllables—were generally more difficult for all language levels, regardless of the morphosyntactic features included in those items. Subjects of all language levels performed below 1 on the 4 score scale for these longer items. We also found that the shorter sentence lengths—6 and 9 syllables—were generally easier for all language levels, regardless of the structures included. Regardless of language level, subjects performed above 3 on the 4 score scale. In order to see starker differences between the language levels we ordered all of the items according to their overall difficulty—difficulty being indicated by low average scores on the items. We then shaded the language level average scores for each item, the lightest shade representing scores below 1 and the darkest shade representing scores above 3. We can see from **Table 5** (overleaf) that the sentences that were on average moderately difficult for the entire population, were on average simpler for level 5 learners and still more difficult for level 1 learners. For instance, for item 7014 level 1 scored barely above zero whereas level 5 scored 2 on the 4 score scale. Each level generally increased in average score as the sentences decreased in sentence length. There were, however, outliers such as item 7039 (18 syllable item) for which average scores exceeded those of item 7014, a 15 syllable sentence.

| Item | Syllables | Level | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 7014 | 15 | 0.06 | 0.27 | 1.02 | 1.44 | 2 |
| 7039 | 18 | 0.24 | 0.8 | 0.95 | 1.25 | 2 |
| 7035 | 15 | 0.59 | 0.83 | 0.91 | 1.46 | 2.15 |
| 7049 | 12 | 0.29 | 0.97 | 1.15 | 1.82 | 2 |
| 7050 | 12 | 0.29 | 0.93 | 1 | 1.75 | 2.62 |
| 7013 | 15 | 0.65 | 0.73 | 1.24 | 1.75 | 2.19 |
| 7030 | 12 | 0.65 | 1.33 | 1.12 | 1.82 | 2.35 |
| 7016 | 15 | 0.65 | 0.9 | 1.67 | 1.92 | 2 |
| 7015 | 15 | 1.12 | 1.53 | 1.65 | 1.89 | 1.73 |
| 7026 | 9 | 0.53 | 1.37 | 1.47 | 2.13 | 2.5 |
| 7032 | 12 | 0.94 | 1.27 | 1.76 | 2.1 | 2.73 |
| 7029 | 12 | 0.59 | 1.3 | 1.62 | 2.3 | 3.31 |
| 7009 | 12 | 0.82 | 1.8 | 1.67 | 2.23 | 3.08 |
| 7031 | 12 | 1.18 | 1.67 | 1.87 | 2.31 | 3.04 |
| 7047 | 9 | 0.88 | 1.67 | 1.87 | 2.38 | 3.15 |
| 7027 | 9 | 0.88 | 1.97 | 1.95 | 2.39 | 3.31 |
| 7051 | 11 | 0.94 | 2.13 | 2.33 | 2.67 | 3.27 |
| 7028 | 9 | 1.65 | 1.67 | 2.55 | 2.79 | 3.27 |
| 7044 | 6 | 2.06 | 2.33 | 2.2 | 2.74 | 3.5 |
| 7042 | 6 | 2 | 2.43 | 2.38 | 2.79 | 3.27 |

***Table 5.*** *Mid-range EI items by difficulty per 0–4 score average.*

In finding that tense, aspect, and 1st and 3rd person singular account for 60% or less of the variance within the sample, we determined that there must be other factors to consider. However, though the r-squared measure accounted for less variance than desired, we knew that it definitely accounted for approximately half of the variance within the sample. Because we had already controlled for sentence length, we understood that phonological sentence length could not account for any of this variance. We therefore determined that something else must be affecting subjects' test performance beside sentence length and tense, aspect, and 3rd and 1st person singular.

Since we stringently controlled for other features—restricted preposition use, limited modals to *will*, used no question words, *do*-insertion, or complex clauses—we knew that those features could not account for the remaining variance within our sample. We determined that further testing would be necessary to determine other features that account for this remaining variance. We suspect that test familiarity, first language (L1), and item order (which now is random) are some features that may account for the remaining variance within our sample.

5. FUTURE RESEARCH. Further studies will be necessary in order to determine which additional features account for the remainder of the variance within our sample and to what extent. We are in the process of conducting a study about the effect of L1 on English language acquisition, and we are conducting a longitudinal study to determine what type of effect test familiarity has on subject responses to our EI test over time. We are also developing an adaptive EI test in order to evaluate the effect of item order on test performance, and in conjunction with BYU's ELC, we expect to integrate our EI test into the ELC's semester placement testing to evaluate the validity of this research.

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# A MODEL OF TRANSLATION BASED ON PROVERBS AND THEIR METAPHORS: A COGNITIVE DESCRIPTIVE APPROACH

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**Abstract:** This article demonstrates that representation of translation by way of a model is possible. As a corpus, proverbs offer a vast and reliable source of previously translated metaphors, in this case, French to English. Proverbs and their metaphors constitute a *sign* with inherent components that include, but are not limited to, message, meaning(s), connotations, and syntactic structure, as well as information derived from sources such as the text or an individual's personal knowledge. Such components are essential and interdependent elements of translation. However, the extent of the role of each of the components that constitute the overall process of translation varies. In other words, the makeup of each proverb and its metaphor varies. Thus, a translation model must be flexible in order to accommodate these variances, a task accomplished by this model through cognitive mapping strategies and the view that translation involves both how it occurs and what occurs.

**Keywords**: translation, proverb, metaphor, linguistics, mapping, conceptual, attribute, relational, model, cognitive

**Languages**: French, English

I PROPOSE that a model of translation is possible, and I present such a model in a form that I derived from an analysis of a corpus of French to English translations of proverbs and their metaphors (Wilson 2009). Proverbs and their metaphors serve as an excellent corpus on which to draw translation data for analysis, and subsequently for formulating a model of translation, for several reasons. The main advantage is that a large body of accepted translations for proverbs exists between various languages, thus removing any question of validity on a specific translation example. A second, equally important, reason is that proverbs generally include metaphors and thus provide a body of culturally accepted metaphor translations. Furthermore, as they are heavily embedded in culture and reveal conceptual thinking, proverbs provide insight into a language group's way of thinking. This insight is reciprocal, in that it can provide a guide to the translation of texts not previously translated.

The model of translation proposed (hereafter Wilson's model) draws on specific conceptualizations of the main components of the concept (*sign*) that the translator must address: message, meanings, context, connotations, and linguistic structure, as well as certain mapping processes and cognitive behaviours. The process of translation, as represented by this

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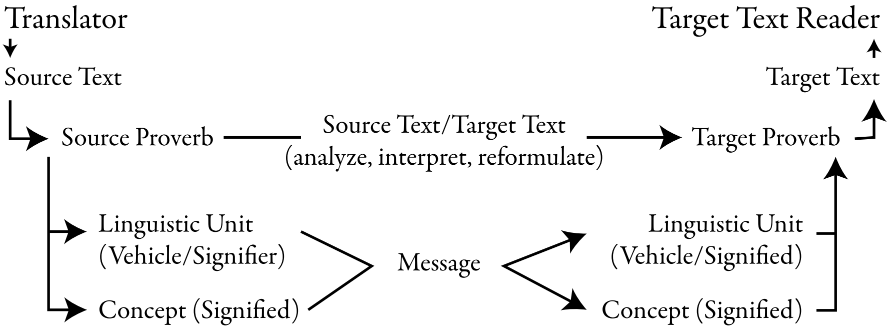

***Figure 1.*** *Basic concept of translation.*

model, simultaneously treats the whole of the sign, i.e., the proverb in its understood form, with the sum of its parts. In other words, the proverb is neither an indivisible whole nor a set of components, rather it is simultaneously both. To accommodate this view, the model encompasses both how translation occurs and what occurs, and, with a multidisciplinary viewpoint, relies on the culmination of a critical examination of the most contemporary and most relevant theories, mainly on cognitive science, translation, semiotics, and comparative linguistics (Wilson 2009).

1. COMPONENTS OF WILSON'S MODEL. To begin with, Wilson's model relies on a fundamental concept of translation, as well as on specific views of message and meaning. The basic premise underpinning translation is that, when translating, the translator undergoes a set of cognitive behaviours (analyze, interpret, reformulate) in which a proverb (the message) transfers from the source language to the target language, as evident in **Figure I**. The message involves, at the least, the concept and its vehicle, in terms of Saussure's sign (2004:65), translatable by rules and processes as presented in Holmes' model of translation (1988:83). Thus, proverbs are treated as signs in this paper; a total concept in the mind, comprising a *signifier* (Richards' vehicle (1965:100); Vinay and Darbelnet's linguistic unit (1995:37) and a *signified*, the concept carried or delivered by the signifier.

The proverb's signifier exists as two entities, linguistic meaning and linguistic structure, in terms of the duality that Eugene Nida specifies for linguistic meaning.

> Linguistic meaning must be carefully distinguished from other types of meaning, for the linguistic signification of a form does not refer to anything outside of the language itself, as does referential or emotive meaning, but rather to the meaningful relationships which exist within the language. On the other hand, linguistic meaning is similar to referential and emotive meanings, for all types of meaning are derived essentially from the signaling of a relationship. (1964:57)

For example, *beggars can't be choosers* has a linguistic structure with nouns, verb, and negation, each of these components having a role and a meaning of its own, and together pro-

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viding a physical component for the message. However, this proverb also has a linguistic meaning, 'people who beg do not have choices', which functions as one of the meanings in the message. The linguistic structure plays a linguistic role and provides a linguistic vehicle for the message while the linguistic meaning contributes a meaning to the message. As each message comprises both linguistic meaning and linguistic structure, the translator must attend to both in translating the message from the source language to the target language.

Furthermore, linguistic meaning is not the only meaning which contributes to the sign. In the following excerpt, Roland Barthes makes several claims about interpreting a text. His main argument, which serves as an integral element of the thesis supporting Wilson's model, is that a text has multiple components (plurality), and is not distinguishable simply as a singular concept, such as a meaning. He contends that no one component outweighs the whole of the group of components, but neither does the text as a whole, nor the components as a group.

> To interpret a text is not to give it a (more or less justified, more or less free) meaning, but on the contrary to appreciate what *plural* constitutes it… this text is a galaxy of signifiers, not a structure of signifieds, it has no beginning; it is reversible; we gain access to it by several entrances, none of which can be authoritatively declared to be the main one; the codes it mobilizes extend *as far as the eye can reach*… [T]he systems of meaning can take over this absolutely plural text, but their numbers are never closed, based as it is on the infinity of language … [T]he text must simultaneously be distinguished from its exterior and from its totality. All of which comes down to saying that for the plural text, there cannot be a narrative structure, a grammar, or a logic; thus, if one or another of these are sometimes permitted to come forward, it is in *proportion* (giving this expression its full quantitative value) as we are dealing with incompletely plural texts, texts whose plural is more or less parsimonious. (1974:5–6)

Just as the translator attends to both linguistic meaning and linguistic structure, he or she must also ensure that the plurality of the meanings for a given signified is maintained. Examine the proverb *you can't be in two places at once*. Several meanings are evident: you have to make a choice. Being in one place means not being in another place, and you want both options, in addition to the linguistic meaning (you cannot be in two places at once). All of these meanings are relevant to the translation of this proverb. Other factors, such as context and connotations, affect these meanings and, in turn, contribute to the signified as well. In other words, a text evokes more entities than the message and meaning(s), none of which entities exists in isolation from the others and must be accounted for in the target-language text.

With set concepts of translation, message, and meaning(s) in place, other relevant components of Wilson's model, specifically connotations and context, fall into place. Connotative values are those that reflect human factors. Due to the proverb's reliance on axiological values, connotations are a prevalent element in the translation of proverbs; therefore, the model treats connotation as one of the important components of translation, one which

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must be accounted for separately, although connotations would generally fall under the umbrella of context.

> The value of connotations rests on the particular nature of the signified, namely:
> its belonging to a specific level of language or type of discourse;
> its affective value;
> its axiological value;
> the associated image;
> Certain additional semantic values become manifested through diverse associative mechanisms (effects of polysemy, collocations, allusion, etc.) (Kerbrat-Orecchioni 1977:90, trans. by the author)

Connotations vary in type and intensity and, per Kerbrat-Orecchioni, lie in the attributes of the specific signified. Language is designated according to levels or types of discourse, such as slang (*yeah!*) versus formal (*yes, Sir!*). Such distinctions convey human values like respect for authority, or conversely, lack of it. Affective values convey emotion, such as disappointment or anger. Compare the difference between *the news upset him*, *the news devastated him*, and *the news reached him*. Each of these statements conveys the fact that someone received news, but the diversity in word choice communicates different emotions, even the absence of emotion, as in the neutral verb *reached*, as well as various levels of intensity, as in *upset* versus *devastated*. Similarly, axiological values, or value judgements such as *good*, *bad*, etc., convey the speaker's value system. Connotations add to linguistic meaning; however, many factors affect the connotations of a linguistic unit, such as culture and other human capabilities, i.e., logic and creativity, and these aspects themselves, in turn, affect the makeup of the proverb and its metaphor. A key factor in understanding proverbs and their subsequent translation lies in understanding the balance that exists between and within individual proverbs regarding connotations, as well as the other components of the message. Connotations generally map from the source language to the target language directly. Thus, for example, *greed* in the source language would reveal itself as *greed* in the target language.

Connotations are indeed a type of context, as the most comprehensive concept of context treats it as a psychological factor:

> The set of premises used in interpreting an utterance (apart from the premise that the utterance in question has been produced) constitutes what is generally known as the *context*. A context is a psychological construct, a subset of the hearer's assumptions about the world. It is these assumptions, of course, rather than the actual state of the world, that affect the interpretation of an utterance. A context in this sense is not limited to information about the immediate physical environment or the immediately preceding utterances: expectations about the future, scientific hypotheses or religious beliefs, anecdotal memories, general cultural assumptions, beliefs about the mental state of the speaker, may all play a role in interpretation. (Sperber & Wilson 1986:15–16)

Therefore, all the factors that affect the human mind in the conceptualization of a proverb constitute its context, including, according to this definition, connotations. In addition to connotations, logic, linguistic meaning, and situation (from the linguistic structure and from the text) are types of context which tend to be prevalent in proverb metaphors. For example, *a bird in the hand is worth two in the bush* relies on context that reflects human logic, i.e. the value of two as opposed to the value of one, but also that one guaranteed is better than two possibilities. The situation evident in the linguistic structure is that a caught bird is better than two free birds. A typical text; however, is unlikely to focus on the subject of birds but will instead convey a situation in which one guaranteed outcome is compared to multiple outcomes that may not transpire; basically, it will constitute an analogue of the linguistic situation. The concept of situation as context is important to the translation of proverbs, due in particular to their analogous nature.

To summarize, the act of translation is a process in which a source text becomes a target text, and fundamental to the entire process is that translation is a cognitive activity comprising multiple processes that are sequential, simultaneous, and interdependent. The components and processes vary in their presence and strength from one sign to the next, and from one translation situation to another. As a source text passes through a set of processes that transfers the sign and its components into the target language, the goal of translation is to maintain as many of the components as possible, as evident in **Figure 1**. These components—message, meaning(s), connotations, context, and linguistic structure—are mapped from one language to the other. The ultimate goal of a translation is equivalence, an event that occurs when as many of the components of the message as possible do match between the two languages.

2. COGNITIVE BEHAVIORS: HOW. Translation as an act is two-fold, in that the components and processes (mappings) are different, yet simultaneous, aspects of the translation model from the behaviors of the translator. Basically, *how* translation occurs is the cumulative cognitive behaviours of the translator and *what* is the transition of the sign and its components from the source language to the target language. Wilson's translation model accounts for *what* happens in that it draws on Wolfram Wilss' (1994) cognitive behaviours, as they present the most accurate portrayal of this aspect of the translation process for the translation model. Wilson's model represents the sum of the translator's behaviours as "analyze, interpret, reformulate" with the assumption that they exist in the same terms depicted in **Figure 2** (overleaf) and under the assumption that they occur at all levels of the model. This set of behaviours is not a closed set, and as such, forms a flexible group that is dependent upon the translator, the translation material and the translation situation; i.e., what is the goal, who is the target reader, etc.

At a minimum, translation involves cognitive functions such as problem-solving and decision-making. Linguistic skills in two languages are not sufficient, as translation is a complex cognitive function that extends beyond linguistic skills. Therefore, any approach to producing or analyzing a process of translation, such as Wilson's model, must view translation as such.

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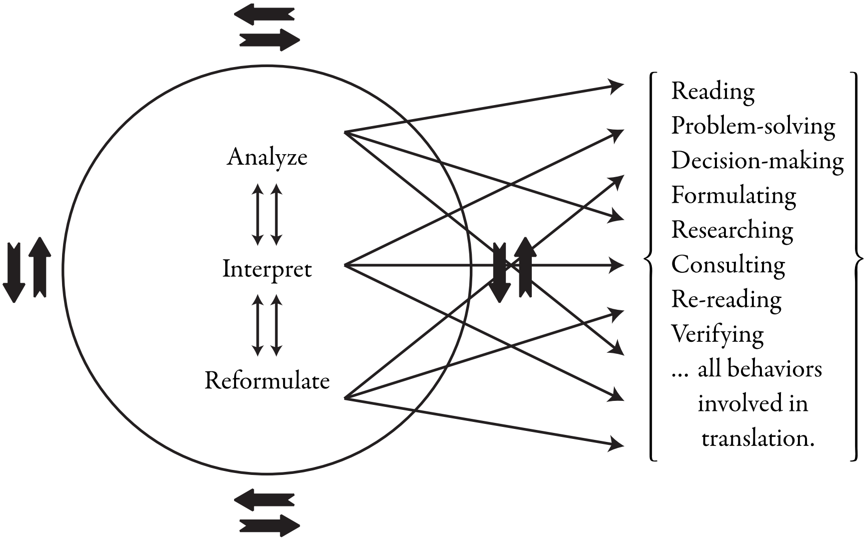

***Figure 2.*** *Cognitive behaviors.*

> If we decide to describe and explain translation processes by means of a cognitive framework of representation and legitimation, this has meaning only if we are prepared to investigate these processes in accordance with operational concepts. Such concepts are action, behavior, problem solving, decision-making, creativity, intuition, and the strategies, methods, techniques, and routines of translation.
> (Wilss 1990:21)

Wilson's translation model places Wilss' operational concepts under the umbrella of three general tasks (analyze, interpret and reformulate), considering them together as a set of processes that occur simultaneous with the structural transition, and as applying to all aspects of the model. These tasks may be independent or co-dependent, may occur simultaneously or successively, and they may occur once or repetitively, depending on the nature of the translation text and the translator's skills. As indicated in **Figure 2**, all the behaviors performed by the translator fall into the realm of operational concepts.

3. MAPPING: WHAT. The translation model represents the what of translation by way of mapping, in the mathematical sense. That is, an equivalence relation holds between the source text and the target text. The sign as a whole is mapped (the sign/message); however, also mapped are meanings, connotations, linguistic structure, and context. Thus, mappings are processes while meanings, connotations, linguistic structure, and context are components. Some mapping occurs directly between languages, such as connotative values, while other mappings take place in the form of mapping strategies. Examples of mapping strategies include: relational mapping (Gentner & Kurtz 2005), in which a relationship is mapped between the two languages, such as the concept that 2 > 1 or that one action

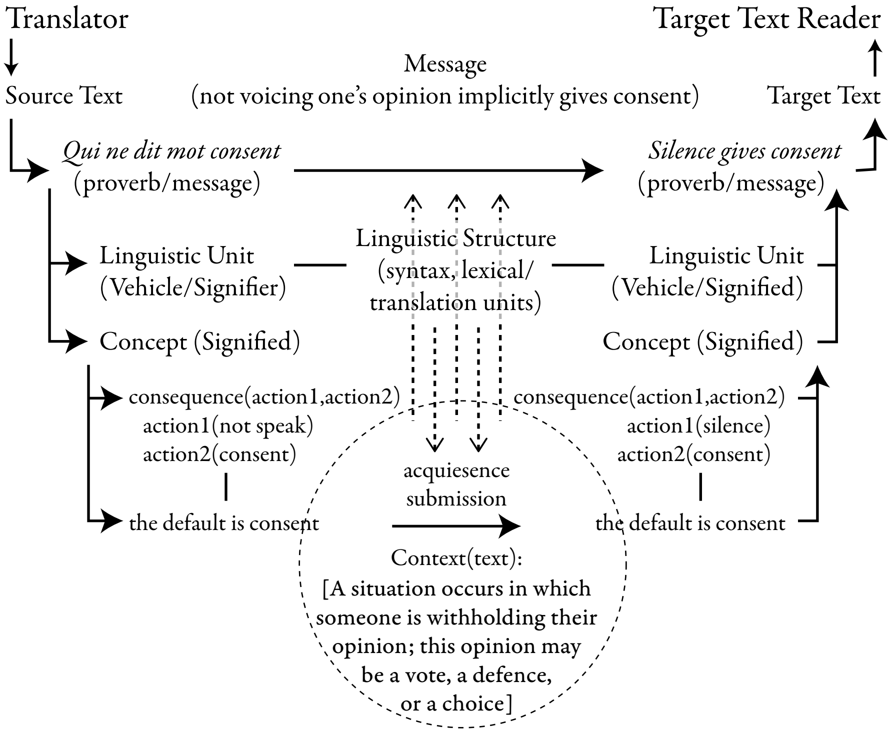

***Figure 3.*** *Model of a translated proverb (accepted translation).*

is exclusive of another[exclusive(action1, action2)]; attribute mapping (Gentner 1983), in which attributes are mapped, such as fire (smoke) or action1 (evacuate); and conceptual mapping (Lakoff & Johnson 1980), which reflects conceptual thinking and organization such as *good is up* or *ideas are plants*[1].

As an example, **Figure 3** examines the French proverb *qui ne dit mot consent*, for which the English equivalent would be *silence gives consent*. For the English translation to be equivalent, it must convey as many of the components as possible of the French proverb, including:

(1) a. Message: not voicing one's opinion implicitly gives consent.
  b. Meaning(s): not to say a word is to be silent, to be silent is to not have a voice or opinion, no voice equates to not having a defence, no defence equates to guilt.
  c. Connotations: affective connotations – acquiescence, submission; axiological connotation – lack of defence implies guilt.

---

[1] Wilson (2009) provides an in-depth discussion on relational mapping, attribute mapping, and conceptual mapping in relation to translation.

(1) d. Context: someone is remaining silent (linguistic structure), in the text we would expect to find an individual or group who is not speaking up and the implied consequence would be guilt.
e. Linguistic meaning: who says no word consents.

Many of the components of this proverb map directly between the two languages, such as the connotations and the textual context. Components such as linguistic meaning, however, rely on mapping strategies in order to transfer from the source language to the target language. The relationship consequence(action1, action2) conveys the concept that the CONSEQUENCE OF ONE ACTION IS ANOTHER ACTION and is a relationship that is mapped from French to English, in this case as THE CONSEQUENCE OF NOT SPEAKING UP IS THE ASSUMPTION OF GUILT. This mapping delivers both meaning and linguistic structure to the target language, while the attributes that are mapped from French to English, [action(not speaking)] and [action(consent)] also contribute to the linguistic meaning and linguistic structure in the target language. The remaining components, the message and any other relevant meanings, as well as the connotations and the textual context, are simultaneously mapped directly to the target language.

4. COMPARATIVE LINGUISTICS. Finally, no discussion of Wilson's model is complete without addressing the role of comparative linguistics. Itself a mapping of structure from one language to another, the linguistic structure, or vehicle, for the message functions in the model mainly from the perspective of comparative linguistics. Vinay and Darbelnet's approach to French and English stem from a concept of planes of expression (1995:54) to which they apply procedures (1977:55) in order to reconcile the differences between the French and English, with a focus on lexicon and syntax. They categorize seven specific procedures to identify structural differences that facilitate translation: *emprunt* 'borrowing', *calque* 'loan translation', *traduction littérale* 'literal translation', *transposition*, *modulation*, *equivalence*, and *adaptation* (1995:55). Vinay and Darbelnet distinguish between direct translation (borrowing, calques, and literal translation) and oblique translation (transposition, modulation, equivalence, and adaptation) in order to account for the translations that appear to be word-for-word as opposed to those which are not. Having made this distinction, they are then able to address the lexical and syntactic aspects of translation from the perspective of each of these two categories. The seven procedures explained by Vinay and Darbelnet are not necessarily applied in isolation from each other. As cognitive processes, they operate concurrently and consecutively, as they undergo analysis, interpretation and reformulation in the same manner as other processes that are part of the translation model. Wilson's model of translation relies on Vinay and Darbelnet's work to address the issues of translation that reside at the level of linguistic structures. Such work is not so freely available for other language pairs; however, this does not prevent Wilson's model from incorporating comparative linguistics as an active process in the model. Furthermore, comparative linguistics as a function of the model relies heavily on translator knowledge and experience, especially in cases where Vinay and Darbelnet's type of research is not readily available as a reference.

5. TRANSLATING A PROVERB. Given the histories of the French and English languages, many proverbs have accepted translations. One of the translator's roles is to know when a new proverb is necessary and acceptable in the target language. If, for example, the translator creates a proverb in a situation in which a commonly understood proverb exists, the reader of the resulting text will feel as if something is not quite right with the text. Therefore, the translator should be aware of existing equivalents, yet have the skill to create one when necessary. Thus, the test for Wilson's model is how the model applies to a proverb without a previous translation, as shown in **Figure 5** (discussed below).

Extensive research did not reveal an English equivalent for the French proverb in (2):

(2) a. Proverb: *L'honneur fleurit sur la fosse*.
b. Literal translation: Honor flowers [flourishes] on the grave.
c. Message: True recognition occurs only after death.

From the point of view of mapping, this proverb turns out to be an ideal example. It is evident is that the key metaphor *fleurit* has an equivalent in English (flourish). While the semantic field of *fleurit* also encompasses *to flower* and *to bloom*, it is the meaning of *to grow* or *to prosper* that needs to remain present, as in *flourish.* Mapping *L'honneur fleurit sur la fosse* reveals that all three mapping strategies function for this proverb:

(3) a. Relational mapping: [flourish (honor, grave)]
b. Attribute mapping: honor, grave
c. Conceptual mapping: PEOPLE ARE PLANTS – flower/flourish; CONTAINER – the grave is a container; GOOD IS UP– honor is above (higher than) the person; GESTALT - whole part structure: honor isn't separate from the person, as it resides at the grave-site with the person.

Given the similarities between French and English cultures regarding the traditions surrounding death ceremonies, i.e. burial sites, flowers on the grave-site, etc., an English equivalent that expresses most, if not all, of the mapping found in the French proverb should be possible. The conceptual mapping that is evident in the source proverb is also representative of the English language as described by Lakoff and Johnson (1980), which further supports this likelihood, as well as the possibility that many of the patterns described in conceptual theory apply to the French language. As a result, one would expect to see a similar proverb in English in terms of linguistic meaning, especially if the other components of the model, such as context, are mapped accordingly.

The French proverb reflects a context in which there is a concern about receiving credit for a deed, with the overall implication that honor and recognition are not the motivating factors for one's actions. Posthumous recognition is a practice known to both cultures, thus an analogy based on this practice is reasonable in the target language. Therefore, one possibility is that a literal translation will serve as an equivalent in this case:"honor flowers on the grave." This option maps the context and the connotations of humility and benevo-

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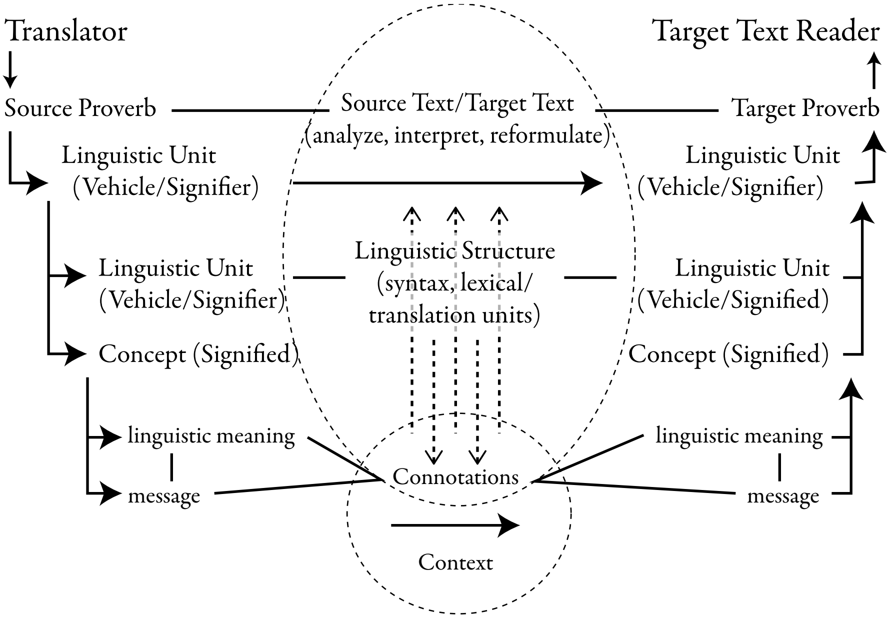

***Figure 4.*** *Wilson's translation model.*

lence directly. Analysis reveals that the source proverb's multiple meanings can be represented in the English translation "honor flowers on the grave."

- honor flourishes on the grave (literal meaning)
- recognition comes after death
- flowers flourish in soil
- flowers are put on graves
- honorable behaviour does not demand immediate recognition
- honor is born on the grave (a flower is a birth)

At this point most of the criteria of the model are met; however, an examination of one last aspect of the model, comparative linguistics, provides an way to ensure that the translation feels right for the English speaker. As for word choices, the word *honor* not only conveys the concept of recognition, but also that of virtue in both languages and is a good fit. Conversely, *to flower* poses a problem. While *flowers* is satisfactory, there may be a better choice that represents both the concept of *flourish* and of the recentness of the event, i.e. after the grave is created. *Fleurir* can mean 'to blossom, to bloom' as well as 'to flower, to flourish'; however, the use of this word to mean 'bloom' is specific to flowers. In French, figurative blossoming requires the verb *s'épanouir* 'to open out or to light up', but this does not convey the same image of plants. In English, although *flower* and *flourish* convey similar concepts and are also used figuratively, *blossom* is a better choice due to its additional connotation of spring and birth, as well as the underlying concept of the onetime event of an individ-

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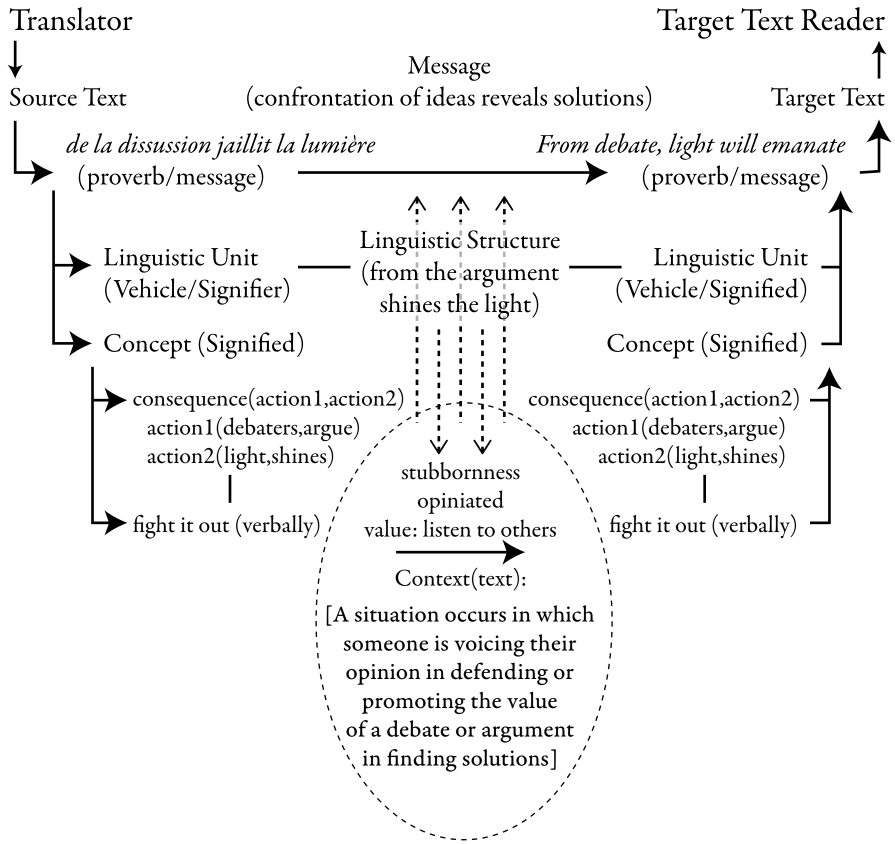

***Figure 5.*** *Model of a (novel) proverb translation.*

ual blossom, as compared to the concept of flowering, which can be one time, continuous, or iterative. The goal of the model in this case is to reinforce the underlying concept that honor is born on the grave. Finally, in this case the structural differences between the two languages are of minor importance, as the model's translation is neither awkward nor disjointed. However, two possible structural changes are given in (4).

(4) a. It's on the grave that honor blossoms.
(The English prevalence of *it*-transposition of the subject)
b. Honor only blossoms on the grave.
(English preference to be more specific, indicating that honor cannot occur before the grave exists.)

6. CONCLUSION. Wilson's model (**Figure 4**) does not address every question regarding translation. For example, how does the brain accomplish mapping components, in what

form do components exist, etc. The functioning of the brain is still a developing science. However, the model does move in the direction of a fuller understanding of areas of language such as translation, language learning, cultural studies, natural language processing, and so on.

Despite the model's sophistication, competency and knowledge on the translator's part are still required. Therefore, specific information, for example that the meaning of *kick the bucket* is a message similar to that of the infinitive *to die*, must be known by or available to the translator, as meanings and messages are entrenched in culture. Basically, aspects such as connotations or context are not always easily derived from the source text, and they require further investigation on the part of the translator. At certain points, the model indicates a need for certain information and this is a signal to the translator for such input. The result is the flexibility that allows for novel translations, such as the previous example, and the additional example demonstrated in model form in **Figure 5**.

Consequently, the model of translation serves as a reference point for translators, for assistance in both evaluating previously existing translations and producing new or previously nonexistent translations, and as an explication of the process of translation, but not as a replacement for the knowledge or skill of the translator.

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# LEXICALIZATION OF THE TRANSITIVE *BE* PERFECT IN SCOTS-INFLUENCED DIALECTS OF NORTH AMERICA

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**Abstract:** In some dialects of North American English the following tokens appear: *I'm done dinner, I'm finished my homework,* and *I'm started my dinner.* These tokens appear to be widespread in Canada; however, they are also found in some dialectal areas in the US as well. In this paper, I draw on historical and dialectal evidence to argue that these tokens are instantiations of a formerly productive transitive *be* perfect; crucial to my argument is the co-extension of these tokens and dialect areas known for a Scottish founder effect. I further hypothesize that the frequent use of pre-nominal *done* in North American dialects may have given rise to its grammaticization as a resultative marker and extension to pre-verbal environments, as in *I done cleaned that up,* a phenomenon well documented in dialects of English in North America.

**Keywords:** lexicalization, grammaticization, history of English, dialects of English, *be* perfect, auxiliary alternation, Vermont, Canada.

**Languages:** English, Scots English, Irish English, Black English, Icelandic, Norn,

ALMOST ALL SPEAKERS of Present Day English produce sentences like *I am done talking to you* and *I am finished marking these papers*, with resultative meaning. However, Northeastern Vermont English (NEVE) and a number of Canadian varieties allow the constructions in (1), also with comparable resultative meaning. The goal of this paper is to demonstrate the lexicalization of [*be done* NP] from an earlier *be* perfect construction in use in Scots and Irish influenced areas and then to suggest the possibility that [*be done* NP] could be the source of the widespread *done* perfect, as in *I done cleaned that up*.

(1) a. I am[1] done dinner
b. I am finished homework
c. I am started this project[2]

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[1] The construction may also be used with the auxiliary *get* as in *I got done dinner* or *I'll call you back when I get my son done bath*. This use of *get* as an auxiliary in this environment is remarkable and is worthy of further investigation but falls outside the scope of the present paper.

[2] Unless otherwise noted, the grammaticality judgments presented in this paper are those of my informants from Orleans County in Vermont.

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The construction [*be done* NP], overall, has marginal status in American English, but occurs in many dialects across Canada. In an informal survey of speakers of Canadian and American English, Jack Chambers (p.c. 2007) found that Canadians generally find it acceptable, while Americans do not. Even within Vermont itself the construction does not seem to be ubiquitously accepted. For example, Julie Roberts (p.c. 2007) of the University of Vermont does not confirm the presence of this construction in the capital city of Burlington. My interest in the NEVE construction [*be done* NP] is motivated by its greater conservatism relative to some dialects of Canadian English in that NEVE speakers accept the verb *start* in this construction, as in (1)c, while Canadians tend not to; this linguistic conservatism goes hand in hand with geographical isolationism in Northeastern Vermont.

To my knowledge, no published studies have addressed the origin, grammatical status, and semantics of the construction [*be done* NP] in North American varieties of English. Jack Chambers (p.c. 2007) informally hypothesizes, with regard to Canadian English, that its source is Scots; in this paper I extend this hypothesis to NEVE and produce historical, literary, and dialectal evidence for it. Although there has been a significant amount of sociolinguistic and descriptive work on preverbal *done,* especially in Southern US dialects (e.g., Dillard 1972; Feagin 1979, 1991; Wolfram & Christian 1975), no attempts have been made in the literature to link prenominal *done* in [*be done* NP] to preverbal resultative *done*.

The data for my research have come from corpora, Internet forums, literary texts, grammaticality judgments, and metalinguistic interviews. For NEVE, I analyzed a corpus of transcribed conversations with native residents of Northeastern Vermont, which was compiled as part of an ethnographic project at Sterling College (Craftsbury, Vermont) under the directorship of Pavel Cenkl. I further searched for tokens of [*be done* NP] in the Contemporary Corpus of American English (COCA), in the database of full-text North American literature *Literature Online,* and in the Canadian edition of the Gutenberg project, a free collection of literary texts. I augmented my corpus research with my own interviews of native speakers of NEVE in which I elicited judgments of grammatical acceptability and sought metalinguistic commentary. To find parallels in American and Canadian English, I searched North American websites for the most common tokens of [*be done* NP]. As connection to Scots and Irish English became clear in the course of my research, I searched the Scottish Corpus of Texts and Speech (SCOTS) for similar constructional tokens, as well as the Irish Internet domain.

My goal in this paper is to argue for the lexicalization of [*be done* NP], and tentatively suggest the possibility that pre-verbal resultative *done* grammaticized out of prenominal *done*. This paper is organized as follows. First, I review my main theoretical assumptions. Next, I discuss the geographical distribution of [*be done* NP] in the US and Canada. Further, draw on dialectal parallels with Scots and Irish English and state the lexicalization hypothesis. Finally, I formulate the grammaticization hypothesis for preverbal resultative *done* on the basis of dialectal parallels between Northeastern Vermont and the Southern U.S.

1. THEORETICAL FRAMEWORK. I follow Lehman (2002) in understanding lexicalization as evolution from the regular to the idiosyncratic and from holistic to analytic access to a linguistic construction. I also follow van der Auwera (2002) in conceptualizing lexicalization

| lexical item | | grammatical formative |
|---|---|---|
| no grammatical function | lower degree of grammatical function | higher degree of grammatical function |

→→→ grammaticalization/delexicalization →→→

←←← lexicalization/degrammaticalization ←←←

***Figure 1.** (De)grammaticization and (de)lexicalization (adapted from van der Auwera 2002: 21).*

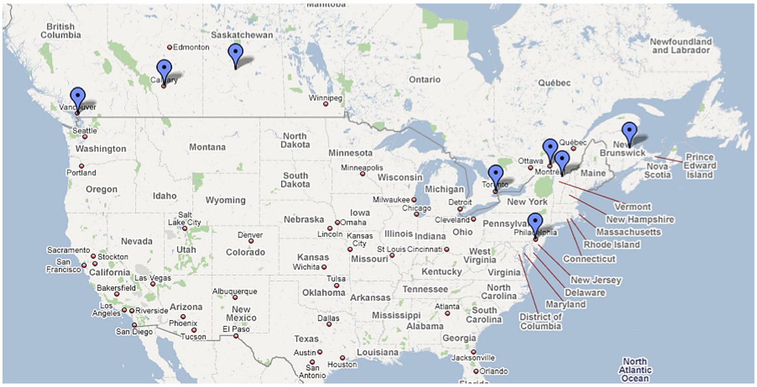

***Figure 2.** Distribution of [be done NP] in North America.*

as loss in grammatical function; I adopt his model of the relationship between grammaticization and lexicalization, as shown in **Figure 1**. This conceptual apparatus is used in the argument that [*be done* NP] is most likely a case of lexicalization of the erstwhile productive transitive *be* perfect.

2. GEOGRAPHICAL DISTRIBUTION OF [*BE DONE* NP] IN NORTH AMERICA. Based on my work with native speakers of Canadian and American English, I have mapped the distribution of this construction in North America (**Figure 2**). Below I provide Internet, literary, ethnographic, and corpus evidence of the geographical spread of the construction in the US and Canada.

2.1. DISTRIBUTION OF [*BE DONE* NP] IN THE U.S. Overall, the construction [*be done* NP] has marginal status in the US. A query for [*be done* NP] in the Contemporary Corpus of American English has yielded only two tokens. One of these tokens has a distinctly Canadian context (it is presented in section 2.2); the other token comes from a conversational exchange on the Larry King show:

(2) Well, I am very proud of him. I think *he is done a wonderful job*. And like I said earlier, I support him in any decision that he makes.

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In the US, the construction [*be done* NP] appears to be limited to very few dialectal pockets—primarily Vermont and Pennsylvania. Thus, it occurs in the speech of speakers native to Northeastern Vermont, as demonstrated by the following examples from the Digital Communities project (Cenkl 2007)[3]:

(3) My grandfather Fisk, when I was going to high school. He used to sit out on the porch, by the road. One night I got so blue and lonesome I walked home from Craftsbury Common. He never said a word to me when I went by, but after I got in the house up there he was right there behind me. Said, what in the hell are you doing here? Is what he said to me. [laughs] I said, *I'm all done school*. Like hell you are, what's the trouble?

(4) My father had, had three brothers one of which went to high school, I think the whole way. But he went away and boarded away, when he went to high school he never came back. *When he was done high school he was on his own*.

Both examples occur in the speech of residents who are reported to have been born, raised, and are currently living in Wolcott, Vermont. The NEVE example in (3) bears a contextual resemblance to the Canadian example from the Corpus of American English given in (17) below and reproduced here in short for convenience as (5):

(5) and I stayed there *until I was done high school.*

The formal and semantic similarity of the Canadian and NEVE examples support the hypothesis of their common origin.

Historical literary evidence offers scarce—but important—evidence that the construction [*be done* NP] is a retention rather than an innovation. An electronic search of North American literary texts through the database *Literature Online* has yielded two tokens of this construction. One of them is presented in section 2.2 in the discussion of Canadian English; the other one (6), which occurs in the play *The Green Mountain Boy* written by Joseph Stevens Jones and published in 1860, constitutes evidence of the retention of [*be done* NP] as a Scots feature in Northeastern Vermont.

The title of the play itself has a reference to its location—Vermont, the Green Mountain state (historically, the Green Mountain Boys were a military force, who declared independence from New York and controlled the territory of modern-day Vermont). The protagonist in the play, Jed (Jediah the Homebread), uses the construction [*be done* NP] in his comment on the practice of having servants:

(6) Wait on him! You can wait on him, if you like; but I shan't. I never was brought up to wait on anybody but myself. I'll go down in the yard, and play with the big yaller dog, till *they're done dinner.* That's the curiousest dog I ever did see.—I can't find out whether his tail is cut off or driv in.

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Of particular importance is Jed's full name—Jediah the Homebread: it serves to emphasize the local roots of the protagonist. As well, as we find out from Jed's self-introduction in (7), he is a common working man, a fact of sociolinguistic importance.

(7) My name's Jediah Homebread,—called Jed for short,—allowed to be the smartest chap at a huskin' or log-rollin' in our parts, besides knowin something about grammar.

Jed's speech is phonologically and morphosyntactically marked in relation to the other characters in the play, who, being aristocratic outsiders, speak in an elevated, formal register. Jed's use of the token *till they're done dinner* is only one feature which the narrator uses in constructing Jed's socio-linguistic markedness as a native of Vermont. Other sociolinguistically marked features which the narrator uses may be traced to Scots. Those features are exemplified in (8). The form *afore* 'before' occurs 1035 times in the Scottish Corpus of Texts and Speech; the form *git* 'get'—371 times; the form *rale* 'really'—29 times; the form *larn* 'learn'—1 time. The form *driv* as a past participle is attested as a feature of Scotch Irish by Montgomery (1997).

(8) a. A sample stands *afore* you.
b. he has to *git* up about twelve o'clock every night Major, I understood you wanted to hire a chap; I s'pose a *rale* cute one.
c. I can't find out whether his tail is cut off or *driv in*.
d. I swow this grammar's awful hard stuff to *larn*.

The character of Jed the Homebred represents a concentration of linguistic features that are supposed to serve as markers of his sociolinguistic identity. The use of the token *til they're done dinner* is not an accident but rather a linguistic testimony to systematic Scottish linguistic influence in Northeastern Vermont.

The construction [*be done* NP] is reported to be found in Pennsylvania (Liberman 2007). In online *Language Log* Mark Liberman (2007) attests to the occurrence of the tokens given in (9) and (10) in Pennsylvania English. Interestingly, Liberman provides these examples in the context of discussing Southern US English, which features the usage of *done* as a preverbal resultative marker, a seemingly related—but not identical—phenomenon.

(9) I am done work for today
(10) You can leave when you are done dinner

Another piece of evidence supporting the presence of [*be done* NP] in Pennsylvania comes from the Linguist List. Howard Geyer (1991) of the University of Pennsylvania reports on his friend's use of the token in (11).

(11) Are you done dinner?

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I found further attestation of this construction occurring in Pennsylvania through a Google search (November 2008) for the string *I am done dinner.* This search returned the utterance in (12) from the blog of an individual, who self-identifies as a resident of Media, Pennsylvania:

(12) hey baby ***i am done dinner*** but i stayed up really late last night

The distribution of [*be done* NP] probably reaches beyond Vermont and Pennsylvania. Thus, consider the token in (13): an anonymous participant in an online discussion forum at *http://www.city-data.com* uses the construction [*be done* NP] to describe the closing of his/her business in Arizona and his/her return to New York. The reference to New York as the original home of the poster points to the possibility of this construction occurring elsewhere in the Northeastern U.S., outside of Vermont and Pennsylvania.

(13) *I am done Arizona*, I am moving back to New York… Having a business in downtown phoenix was fun while it lasted. We are selling the business. But it was never like home. I did enjoy my few months here and look forward to being back in New York.

Further evidence of the construction [*be done* NP] occurring outside the dialectal pockets in Vermont and Pennsylvania comes from Liberman's (2007) quotation of Kyle McCaskill, who reports that the token in (14) occurs in the speech of her husband, who is from North Carolina; as well, she reports on the use of the token in (15) in the speech of her colleague who is from New England (unfortunately, it is not reported what part of New England that colleague is from).

(14) I am done this book
(15) I am done this round of checking

Finally, a token of the construction [*be done* NP] occurs in a nineteenth-century American play by Brander Matthews, who was born in New Orleans, Louisiana, and was literarily active in New York City. The play opens with the following utterance by Rose, a servant character:

(16) […] Eight! She must be done dinner by this time! Ah! Here she is!

2.2. DISTRIBUTION OF [*BE DONE* NP] IN CANADIAN ENGLISH. While this morphosyntactic isogloss has a fairly restricted dialectal distribution within US English, it is widespread in dialects of Canadian English. One of the two tokens of the construction [*be done* NP] found in COCA is produced by a speaker with a distinct Canadian background; the singer Lullaby Baxter says the following in an interview about her background and music:

(17) After Scarborough, I moved to Calgary with my family—they moved there during the boom—and I stayed there until *I was done high school* and then I went into women's studies in Concordia University in Montreal, believe it or not.

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An illustrative token of this construction may be found in the blog of an anonymous online blogger, who identifies herself as being from Canada. In this blog the author discusses the meaning of everyday words. When she comes to the word *done,* she offers the following commentary:

(18) Again we use this every day. *I am done dinner.* Are you done yet? It's final, finished and yet in a relationship that is rocky… someone will always say…. "I'm done." Not sure if it means, done loving you, done fighting for you, done just fighting… so what does "I'm done" suppose to mean?

Two tokens of [*be done* NP] come from online writers, who self-identify themselves as residents of Ontario. One of these two writers, who identifies herself as being from the village of Ayr in Southwestern Ontario, produces the following utterance:

(19) I try to ensure *I am done dinner* by 7:00 in the evening and the only snack I will allow myself is a small container of yogurt or a handful of popcorn after that.

Another female writer, who is from the town of Elmira in Southeastern Ontario, produces two tokens of [*be done* NP] in a series of exchanges at an online missionary forum. First, she asks another participant if she has completed her missionary service:

(20) Are you done the service now?

Further on, she produces a more frequent token:

(21) I have to pick up pizza (YUM) so i cannot properly anwser [sic] this question, so i will email you cause by the time *I am done dinner* and back on ia m [sic] sure it will be like 1 am for you.

The occurrence of [*be done* NP] in combination with the noun *service* is theoretically important in that it shows that there is a certain degree of schematicity (analyticity) to the construction—the usage *I am done dinner* is not simply a dead lexical fossilization.

The presence of [*be done* NP] in Saskatchewan is supported by grammaticality judgments from Karen Jesney of the University of Massachusetts Amherst, a native of Saskatchewan. According to her, the following tokens are well-formed in her dialect:

(22) a. I'm done the book.
b. I'm done my shower.
c. I'm not finished dinner yet.
d. I'm still not done my homework.
e. I'm finished the cake.
f. They're not finished the race yet.
g. We're finished the novel study.

(22) h. You're not done all the candy, are you?
i. I'm done the reading of the book.

Furthermore, there is literary evidence that supports the presence of [*be done* NP] in Saskatchewan. Ralph Connor in his novel *A Foreigner: A Tale of Saskatchewan* presents the following conversational exchange:

(23) "Why, Kalman," exclaimed his sister, "*you are not half done your feast*[3]. There are such lots of nice things yet."

3. parallels with scots and irish english.

3.1. scots. There are multiple tokens of [*be finished* NP] in the Scottish Corpus of Texts and Speech, e.g.

(24) a. We're nearly finished this ain't we.
b. We are finished this ones and this ones and this ones, Mammy.
c. I'm finished something.
d. You can get ain when we're finished our tape.

Trudgill and Hannah (1982:88) view the token *I am finished it* as a feature of Scottish English, and contrast it with the standard pde tokens *I am finished* and *I have finished it.* This feature appears to be lexicalized: today it is limited to similar lexicalized contexts, as in Canadian and Northeastern Vermont English. Such parallels speak to a genetic relationship among these three varieties of English.

At the same time, Shetlandic, a relatively isolated, insular variety of Scots, is a source of some evidence of the productive *be* perfect. Having focused my investigation of the scots on texts and transcripts from the Shetland islands, I found occasional tokens of the *be* perfect construction with both intransitive and transitive argument structures:

(25) a. *the bairn wis grawn sieven year auld*
'the child was grown seven years old'
b. *Hit wis come in me mind*
'It was come in my mind'
c. *heidmaster realised we were done wur bit*
'headmaster realized we were done our bit'
d. *A'm funn dem!*
'I am found them'

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[3] An anonymous reviewer suggests that the examples in (23) and (24) may be lexicalized idiomatic constructions. While I concede a somewhat idiomatic nature of [*be done* NP], I should note that the direct object slot in this construction is highly variable, with only few semantic and morphosyntactic restrictions. Such openness of the direct object slot points to a certain degree of constructional schematicity; it is the direct object slot that is prototypically idiosyncratic or frozen in idioms, but [*be done* NP] is not such a case—see (20), for example.

e. *A'm read dem ower*
'I am read them over'

The *be* perfect construction in Shetlandic arose as a result of language contact between the North Germanic language Norn, spoken by Vikings, and central Scottish dialects, which were brought to the Shetland islands by Scottish immigrants. Pavlenko (1996) hypothesizes that one major factor conducive to that rise was the homophony of the reduced forms of the auxiliaries *hafa* 'have' and *vera* 'be' in Norn.[4] Hypothetically, this led to a reanalysis of *have* as *be* in auxiliary function. This hypothetical reanalysis is indirectly supported by Rundhovde's research (1964:146ff.; cited in Melchers 1992:604), who reports on a Norwegian dialect where a similar merger of *hafa* 'have' and *vera* 'be' occurred, and speakers use the auxiliary *be* in perfect constructions (e.g., *I am eaten, I was just eaten* [glossed into English from that dialect]). Another important factor was that Scots immigrants at that time also had in their dialects a formally similar intransitive *be* perfect. Thus, the fusion of the autochthonous Norn *have* perfect, in which *have* was homophonous with *be*, and the Scottish intransitive *be* perfect led to the emergence of the transitive *be* perfect in Shetlandic. Of special interest to the present paper is Pavlenko's (1996) mention of the Scots' use of the forms *be din* 'be done' and *be begood* 'be begun', which, he hypothesizes, merged with the transitive *be* perfect construction in Shetlandic. The tokens discussed by Pavlenko bear a formal and semantic resemblance to the tokens *I am done dinner* and *I am started this project* in Northeastern Vermont and Canadian English.

It is noteworthy, though, that corpus evidence of the *be* perfect in Shetlandic is not abundant; my search has also yielded multiple tokens of the *have* perfect in Shetlandic sources, for example:

(26) a. there is also a lot of people that have come fae Fife
b. Shetland's roads and hills have never seen packs of cyclists

The gradual spread of the auxiliary *have* throughout the perfect paradigm in Shetlandic is probably attributable to the socio-linguistic influence of Standard English; Pavlenko (1996) dates the beginning of the decay of the transitive *be* perfect to the mid nineteenth century. The data in (25) and (26) show that the *have* and *be* perfects are now in free variation in Shetlandic, which resembles the situation in mainstream dialects of Early Modern English. It would not be surprising if the *be* perfect in Shetlandic started to lexicalize in high frequency environments just as it did in NEVE, Canadian English, and mainstream Scots English.

The occurrence of [*be done* NP] in Northeastern Vermont is predictable given its demographic history; the Scots are known to have played a major role in the settlement of Northeastern Vermont. After 1820 sixty Scottish families came from Scotland to settle in the towns of Craftsbury, Glover, and Greensboro (at the time 60 families constituted roughly one quarter of the whole town). They left their home, the upper Irvine Valley of eastern Ayrshire, because the consolidation of agriculture in Scotland was forcing them into miserable existence in mill towns. They came to Northeastern Vermont via two routes:

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[4] See Pavlenko (1996) for examples of perfect constructions in Norn.

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New York and Montreal; they typically bought land from Yankees moving West (Shields 1996). The Scots have maintained a strong presence in those communities up to now. For example, the Urie family, which was originally from Paisley, Scotland, moved to the town of Albany (bordering on Craftsbury) in 1828 (Wharton 1991); today, their descendents are well-known throughout the local community. The influx of Scottish immigrants continued well into the twentieth century; of particular interest is the case of James Houston Ingram who reports that he was born in 1905 in Philadelphia to a family of Scotch, Irish and Welsh descent, and later in life moved to Albany (Wharton 1991); it is noteworthy that Philadelphia is historically a hub of Scotch-Irish immigration into North America and an area where the construction [*be done* NP] is found as well.

3.2. IRISH ENGLISH. Irish English has the construction [*be done* NP] as well. Given that the Scots are known to have migrated to Pennsylvania through Ireland (Leyburn 1962), it is not surprising that reflexes of [*be done* NP] are found there. I found an abundance of tokens of this construction within the Irish Internet domain (I used the Google engine to limit my results to the *.ie* top-level domain), e.g.,

(27) a. It is important that *I am finished my morning routines* by ten o'clock so I can prepare my swimming bag before the bus comes at half past ten.
b. *I am finished my studying* in the middle of May 2009 and I am interested in a nanny job.
c. I still have six more weeks to go out of the 26 weeks required for the Gaisce award, but I intend to continue acting classes well after *I am finished the bronze award.*
d. Now *I am finished my GAA poem*!
e. Now *I am done my song,* boys, but yet don't go away, ["The Hurlers of Mount Sion," Waterford Songs]
f. Yes, *she is done a great job,* you know the way she was saying, in the interview you know for mainstream education and it's such an important thing for children.

The similarity between (27) and the example in (2) from the COCA is noteworthy; the latter example is reproduced here in short for convenience as (28).

(28) I think *he is done a wonderful job*.

Irish, also immigrants, contributed to the social fabric of Northeastern Vermont. For instance, in a survey of histories of foundational families, the Albany Historical Society (Wharton 1991) reports on five families, who settled in the town of Albany in the nineteenth century and grew deep roots there; five families is a significant number for the town of Albany, which, according to the US Census Bureau, had 286 residents as of 2000.

4. LEXICALIZATION HYPOTHESIS. Before advancing the hypothesis that [*be done* NP] is a lexicalization of the erstwhile productive transitive *be* perfect, I will present Bybee et al.'s (1994) framework for the analysis of semantic categories in a diachronic perspective.

Bybee et al. (1994) distinguish *inter alia* the following semantic categories: stative, resultative, anterior, and perfective. Statives express unchanging situations that will continue unless something happens (e.g. *know, want, be tall*). Resultatives signal that a state exists as a result of a past action and are often similar to passives in that their patients are subjects (e.g. *The door is closed*), but they are different in that resultatives can apply to intransitive verbs (e.g. *He is gone*) without a change in subject. Resultatives are different from passives and anteriors in that the result of the action persists at reference time. Anteriors are different from resultatives in that they express relevance for the present in a much more general way. The semantic compositionality of resultatives and anteriors is schematically represented in (29); relevant illustrations are given in (30).

(29) Resultative: action → state
Anterior: action → present relevance

(30) He is gone (res.) :: He has gone (ant.)
The door is closed (res.) :: The door has closed (ant.)

Historically, resultatives are known to develop into anteriors (as in the history of the English periphrastic perfect constructions). Anteriors, in their turn, are known to develop into perfectives, which are temporal categories describing "single, unified, discrete" situations (p. 83). The perfective is a semantic notion; it is different from the formal notion of Present Perfect [*have* V-*en*]. In most dialects of English, Present Perfect has not yet developed into a perfective, which may be seen in its incompatability with adverbials such as *ago, yesterday, last year*. Thus, Bybee et al. (1994:62) report such usage as questionable:

(31) a. ? Carol has taken statistics last semester.
b. ? I've gone to the bank at nine o'clock in the morning.

At the same time, the development of anteriors into perfectives is well attested in many Indo-European languages; for example, in German, the form *Perfekt Präsens* has developed into a perfective, as evidenced by the data in (32) where this form occurs with both anterior (*today*) and perfective (*yesterday*) adverbs.

(32) a. *Heute habe ich gegessen*
Today have I eaten
'I have eaten today'
b. *Gestern habe ich gegessen*
Yesterday have I eaten
'I ate yesterday'

Today there is synchronic evidence to believe that the construction [*be done* NP] behaves like a resultative one, distinguishing itself from its close relative—the stative [*be done with* NP] construction. Its resultativity may be seen in the example in (33), volunteered by a

NEVE native speaker in an elicitation task, where the benefactive argument forces a resultative interpretation (which would be impossible for the stative token **I am done with dinner for you*).

(33) *I am done dinner for you*
'I have cooked dinner for you'

Further evidence supporting the resultativity of [*be done* NP] comes from its contrast with [*be done with* NP]:

(34) a. *I am done Canada*
'I have been to Canada'
b. *I am done with Canada*
'I never want to visit Canada again'

While a detailed semantic analysis of [*be done* NP] is beyond the scope of the present paper, the data in (33) and (34) tentatively suggest the resultative (as opposed to stative) semantics of [*be done* NP]. It is important to the lexicalization hypothesis advanced in the present paper since resultativity is an attested semantic stage in the grammaticization of perfects (Bybee et al. 1994); the resultative nature of [*be done* NP] suggests that it is likely to be an exemplar of a perfect construction.

Following Bybee et al. (1994), who have shown that higher frequency correlates with older age, one might assume that the construction [*be done* NP] has a long history. The dialectal evidence reviewed above points to the hypothesis that the construction [*be done* NP] is a reflex of the erstwhile productive transitive *be* perfect, a perfect that is attested in insular Scots (Robertson & Graham 1952:11; Flaws & Lamb 1996:x; Millar 2007:75)[5]. Relying on synchronic resultative reflexes, I assume that the three frequent exemplars (*done, finished, started*) of the transitive *be* perfect were entrenched in the resultative domain, a phenomenon that most likely occurred as a result of interdialectal competition from the *have* perfect. I argue that the entrenchment of these exemplars in the resultative domain represents a case of lexicalization, adopting van der Auwera's framework that views loss in grammatical schematicity as lexicalization. I formalize the lexicalization hypothesize in **Figure 3**.

This hypothetical entrenchment is reminiscent of the entrenchment of erstwhile anterior intransitive tokens (e.g. *He is gone* and *Christ is risen*) in the resultative domain in Early Modern English, a process termed lexicalization by Kurylowicz (1965). Such lexically entrenched resultatives in Present Day English are in principle similar the lexicalzation of [*be* {*done*, *finished, started*} NP] in Vermont, Canadian, Philadelphian and Scots dialects.

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[5] Interestingly, Middle English reference grammars (e.g. Visser 1993:2043, Mustanoja 1960:500–1) often cite sporadic exemplars of the transitive *be* perfect but usually attribute them to indeterminate foreign influence. I suggest that these attestations are perhaps Scotticisms that trickled down to English dialects.

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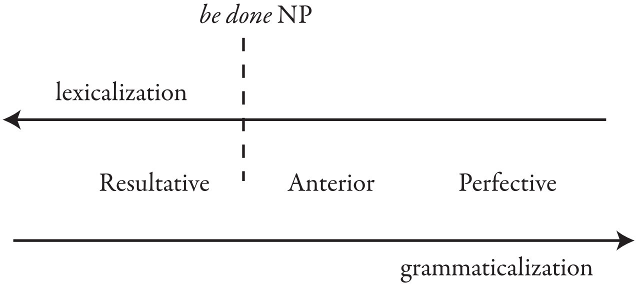

***Figure 3.*** *Lexicalization of [*be done *NP].*

The plausibility of the proposed diachronic scenario might be seen in the competition between [*be* V-*en* NP] and [*have* V-*en* NP] ongoing today in Shetlandic, in which [*have* V-*en* NP] is winning.

5. GRAMMATICIZATION OF THE PREVERBAL RESULTATIVE *DONE*. In NEVE, there is a cognate construction, [*done* V], as demonstrated by the tokens in (35), elicited from native speakers of NEVE. In these examples, *done* functions as a productive preverbal resultative marker.

(35) a. I done cleaned that up
b. I done fixed my truck
c. You done ruined it
d. You done messed up
e. He done done it
f. You've done ate it
g. You've done gone too far

This construction is much less widespread in NEVE than prenominal resultative *done* in [*be done* NP]; only older speakers of NEVE find it well-formed. The construction [*done* V] has been documented in other varieties of Southern US English (e.g. Feagin 1979:119–149). The constructional tokens in (36), given by Feagin for Alabama English (1979:127–28), structurally parallel those in (35) for NEVE.

(36) a. It was so quiet I thought everybody was done gone to bed
b. You done woke me up
c. I think that Mr. Kershaw has done passed away
d. He may have done retired

Montgomery (1997:6) treats the token *I done finished* as of Scotch-Irish influence, which provides indirect evidence to support the hypothesis that NEVE and Scots English are genetically related and that [*be done* NP] and [*done* V] are related constructions. The assumption of genetic relationship leads one to a hypothesis that the construction [*done* V] might have developed from a reanalysis of the lexicalized *done* as a productive aspectual marker. It seems plausible that the high frequency of the token *done* in the construction [*be done* NP] might have led to it being extracted from lexicalized resultative contexts and its grammaticization into an aspectual, resultative marker across a variety of tense-aspect constructions. While the two constructions share the resultative semantics, the difference between the two lies in the degree of their schematicity: while [*be done* NP] is a lexicalized reflex of the erstwhile productive *be* perfect, *done* in [done V] is a productive, grammaticized form. The co-occurrence of [*be done* NP] and [done V] in the speech of the same NEVE informant is probably reflective of an earlier stage of Scots English and suggests that in some Scots-influenced varieties of English the following development might have occurred:

(37) productive transitive *be* perfect >
lexicalized resultative [*be done* NP] >
grammaticized resultative *done*

Of course, further studies are needed to prove or disprove this grammaticization and the directionality of this cline. But from a synchronic perspective the recognition of similarities between the formal and syntactic properties of these constructions should lead one to the recognition of similarities between [*be done* NP] and [*done* V] at the right level of abstraction (inheritance hierarchy). To capture those similarities analytically, one might propose that [*be done* NP] and [*done* V] are mesoconstructions (albeit with varying degrees of schematicity), which merge into one macro-construction.

The grammaticization of a completive verb into a resultative marker is not typologically odd. For instance, consider the data from modern Icelandic, a language that is closely genetically related to Norn—a parent language for Shetlandic. In Icelandic there is incipient ongoing grammaticization of a new perfect construction, which consists of the auxiliary *be,* a completive verb in past participle form, and the infinitive (Wide 2003):

(38) *vera búinn að* + infinitive
be finished/done to

This development in Icelandic presents a documented precedent for the conceptual extraction of the completive verb as a resultative marker and its incipient routinization in that function. In principle there is no reason why similar grammaticization could not have happened in varieties of English genetically rooted in Scots English. The Icelandic construction is also reminiscent of the construction represented with the tokens in (39) that occurs ubiquitously in English (and is not restricted to Scots, Canadian, or Northeastern Vermont English):

(39) a. I am done talking to you
b. I am finished marking

The mainstream modern English construction [*be done/finished* V-*ing*] also bears a semantic resemblance to the Icelandic construction [*be finished/done to* V] in that both constructions are resultative—an indicator of the grammaticization of perfects. While in Icelandic this grammaticization is ongoing, in English [*be done* V-*ing*] probably is a lexicalized entrenchment reflecting an erstwhile transitive *be* perfect

There has been a long-standing controversy between creolist and dialectologist views on preverbal *done.* Traditionally, creolists have associated it with Black English, while dialectologists have emphasized its attestations in Middle English, Middle Scots, as well as the speech of "uneducated" Whites in the South. A Scottish etymology of pre-verbal *done* has been tentatively suggested in the literature as part of the dialectogist hypothesis but is either disputed or mitigated by creolists' analyses. For example, while acknowledging the possibility of Scottish etymology for preverbal *done,* Feagin (1991:187–88) hypothesizes that preverbal *done* in her Anniston data was reinforced by creolized *done* in Black English. My data in (35) comes from Orleans county in Vermont, which has a 97.1 % white population and preserves reflexes of [*done* V]. The occurrence of the preverbal *done* in a densely white county casts a shadow of doubt on the creolist hypothesis and reinforces the dialectologist hypothesis on the origin of preverbal *done.*

6. CONCLUSION. I have considered data from American, Canadian, Scots, and Irish varieties of English, paying particular attention to Northeastern Vermont English. I have argued that the construction [*be done* NP] in NEVE is a lexicalization of the erstwhile productive *be* perfect which most likely originated in Scots English. I have further suggested the lexicalized reflex [*be done* NP] might have given rise to the grammaticization of preverbal *done* in dialects of English.

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# THE DOUBLE FACE OF GLOTTIC IDENTITY REVEALED IN TRANSLATION

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**Abstract:** In an attempt to reconcile the neurocognitive approach to language proposed by Sydney M. Lamb and the integrationist perspective on language use advocated by Roy Harris some reference to recent findings in translation theory is made and the results of a sample translation analysis are presented. Illusions about language identified by Lamb are paralleled with some myths about translation identified within the cognitive-communicative paradigm. Identification of those myths symbolizes changes of format in translation theorising, from text – and process-oriented models to translator-centred approaches, which find neurological confirmation and language-related justification both in neurocognitive and the integrationist theories, though one treats language (the human linguistic system) as the core of its study, while the other claims that language is not an object of study in its own right. Each of the models focuses on a different aspect, or face, of the language user's glottic identity, a different portion of dually configured *etholinguistic* (not *ethnolinguistic*) reality.

**Keywords:** language, translation, translator-centred approach, neurocognitive theory, integrationist theory, glottic identity, etholinguistics

**Languages:** English, Polish, Hungarian

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*si duo dicunt idem, non est idem* (Terence)

THERE ARE THREE MAIN SOURCES of inspiration for this article: relational, or neurocognitive, Sydney M. Lamb's language theory; my experience with literary works and their translated versions; and my recent interest in integrational language theory, advocated primarily by Roy Harris. To Sydney M. Lamb I owe my conviction that language is an individual information network of relations and belongs to one's cognitive system. Experience with translations of literary works is responsible for my doubts about the validity of translation theories focusing solely on concepts like text equivalence or equivalence of reaction of the readers or empathy for the author. Readings in integrational linguistics have provided me with a new insight into the treatment of language; Roy Harris has proposed the idea of *glottic identity*, which might prove useful in discussing some aspects of translation related research. These three sources have been complemented by yet another one—Eva Hoffman's observations on what she calls her life in a new language and losses in translation, which express some of my own feelings about being bilingual and about translation.

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Her statement "Human beings don't only search for meanings, they are themselves units of meanings…" (Hoffman 1989:279) has encouraged practical research into *si duo dicunt idem quare non est idem* – why, if two say the same, it is not the same, and, going still further, why individuals interpret the same words in different ways, which implies looking for answers about divergences between translation versions in translators themselves.

1. PARADIGM CHANGE. The change of the paradigm that has been predominant in linguistics for years, from generative-transformational to cognitive, parallels the change in translation studies, from text- and process-oriented to translator-centred. The focus of attention in both is the actual human being and investigations conducted within one of these areas of research appear to legitimize the results of the other. The neurocognitive approach may be credited with stimulating, if not introducing, a novel way of thinking about language, which proves quite fruitful in discussing translation.

Lamb postulates a realistic approach to language investigation, one that does not succumb to fallacies, illusions or long-lived myths about language (Lamb 1999, 2002, 2004). The set of myths, quite diversified and bearing different labels, have a common denominator, however, of influencing the shape and character of the theories proposed, incorporates the following as its most forceful members: language idealization, implied by the study of the language of some ideal speaker-hearer; language reification, evidenced by the belief in the existence of rules and other symbolic objects of study (words, morphemes, language itself); and language uniformity and unity, understood as sharing the same, single and unified language system by members of a particular community. The language system conceived this way does not seem to allow us to account for language processing, speaking and understanding.

Any realistic approach to language study, in clearly stated opposition to the mythical standpoints, acknowledges the legitimacy of language individualization (the study of the language system of a particular person), language relationality (treating the language system of an individual as a network of relationships), and language uniqueness and polysystemicity (recognizing the fact that individuals have their own, unique, complex, or multiple, language systems). Vesting language in an individual, with due recognition given to its relational character and reflecting the neurocognitive character of human functioning, is seen here as a prerequisite for reliable language analysis and an important theoretical implication for translation studies. In order to satisfy the theoretical postulates, translation should be treated not as changing one set of symbols into another, aimed at fulfilling the impossible requirement of evoking the same reactions in the target text reader as in the source text recipient, but as the realization, in the target language, of the set of relationships expressed in the source language, with heavy dependence on the cognitively different systems of the persons involved in this process, the author and the translator.

Some other illusions that may prove important for the line of reasoning presented here, like introjection, monosemy, or the linearity assumption (cf. Lamb 1992, 1999), are of a more technical character and largely procedure- or notation-influenced. Introjective modelling, contrary to projective modelling, is notorious for identifying linguistic expressions, particularly in written form, with linguistic or conceptual structures. The monosemy

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assumption implies ascribing single core meanings to single expressions. The linearity illusion, as identified and discussed by Lamb (1999), is ascribed to the linear character of writing, influencing the treatment of speech. The opinion voiced here is more radical: linearity appears to be a misnomer and its use for sequentiality has distinct analytic consequences. Let me repeat in this context that linearity implies unidimensionality, while sequentiality does not and that the detailed analyses of the movements and changing shapes of organs involved in speech production, as well the shape of alphabetic and other writing systems, point to the fact that these analyses would profit by not treating speech and writing as unidimensional. Changing the perspective and treating speech as sequential may not merely imply its consecutive and continuous character, but also allow for its treatment in terms of merging and overlapping features, realizations of various and varied relationships. When used for describing translation, sequentiality may not connote with linearly arranged discrete elements, but may imply the consecutive and continuous character of expression of multilayered structure (Zaliwska-Okrutna 2008).

2. ADDITIONAL INPUT. The research conducted within the neurocognitive framework by Meyer (1991) on the repeatedly (twice, to be exact) told stories of a single experience is relevant here, as well as the work of Paradis (2004) on bilingualism. Meyer combined Lamb's theoretical approach to language with methods used in conversation analysis to yield quite revealing results about the working of memory and of the human cognitive system in general. The study indicates that memories of past experiences are originally represented in the brain perceptually, in the form of interconnected cognitive chunks, which, on subsequent tellings of the story, acquire partly linguistic representation in addition to the perceptual one. In recovering those experiences verbally, one refers directly to their verbal aspect and indirectly to the perceptual one, translating the perceptual into the verbal. Each subsequent telling of the story primes its verbal recovery and facilitates adjusting it to the needs of the listener. One may infer that translators are no exception here in having at their disposal sets of perceptually preserved experiences and sets of verbally preserved experiences, with both, however, being dependent in their nature on the type and degree of individual bilingualism; the configurations could, for example, include perceptually and verbally preserved experiences both within the source and the target culture system, the experience perceptually preserved in the source culture and at some point verbalized in the target language, or the need to express verbally in the target language the experience unknown from the source culture.

When two say, or write, the same, it is not the same—texts, in order to be properly understood and translated, require proper contextualization and insight into the minds of their authors. The value of heavy reliance on texts in translation has been undermined in some modern, cognitively oriented, theories of translation. Examples are provided by Hejwowski (2004a, 2004b), who recognizes translation not as an operation performed on texts or languages, but on human minds: a real one—that of a translator—and three others, ideated by the translator: that of the author of the text, the source-language text recipient and the target-language text recipient. Since the minds are real or ideated, but not idealized, the theory provides for individual mistakes, lack of skill or expertise.

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3. TRANSLATION ANALYSES. Analyses of translations typically take the form of text comparisons: the text of the original is compared with the text of the translation; on a more sophisticated level the original is confronted with two or more translations into one target language or different target languages. When estimating the value of translations, competent critics extend their analysis from technical and syntagmatic type of errors to errors in interpretation.

In his 2002 *LACUS* forum presidential address Adam Makkai analyzed six English versions of Atilla József's poem *Születésnapomra* 'For my birthday', in an attempt to prove that "Translation becomes possible to the extent that the translator [...] is able to look behind the dictionary definitions of the words constituting the utterance in question and reconstruct the context of the situation" (2003:5). The readers are provided with some biographical information about the Hungarian poet and a sentence-long piece of information about each of the six translators, three of whom happen to be linguists or poets. The translations are not discussed in detail and no errors are mentioned. Instead, the result of the vote for the translation felt, in Makkai's words, to be the best by people approached about it was produced by a bilingual native Hungarian, living in London, a Ph.D. in physics. Makkai relegates the explanation of this "MYSTERY" to linguists expert in understanding how the human brain works, like Lamb (1999:203): "There is no such meaning as the meaning of text apart from an interpreter[.... M]eaning is not conveyed by a text, as the usual metaphor would have us believe. Rather, elements of the text activate meaning in the minds of interpreters."

The Polish linguist Bożena Tokarz (2002) goes a step further and concludes that translators, as the recipients of the original information and the senders of this information in the target language, offer interpretations which are the result of adjusting their *profil oglądu* 'viewing profile' to that of the author. Translations, then, are judged on the extent to which the translators succeed in adjusting their viewing profile to that of the author and render it adequately in the target language.

The question arises, however, if the translators really adjust their viewing profile to that of the author or if they filter the supposed view of the author through their own perspective, simply because they cannot act otherwise. "The meaning constructed by the receiver of the text is the same in all details and implications as that constructed by the sender only if the two have identical cognitive systems—that is, never" (Lamb 1999:203). The differences are augmented if multilingualism is taken into consideration: translators differ in their language systems, which reflect differently configured cognitive systems, realized differently in speech or writing in different languages.

If we further agree with Lamb that every one of us, in the course of our lives, builds our own "model of the world and the self and of the self's position in that world" (1999:105), the explanation of variations in the use of language, different interpretations of language used by others may have to begin as early as the language user's childhood or even before.

It has been confirmed by studies of language acquisition in children—from which an American 1990s longitudinal study on a large sample has been chosen here (Bates, Dale & Thal 1995)—that the variation in the speech of young children is too substantial not to be considered. The parameters studied, in both typical and atypical populations (early talkers,

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late talkers, children with focal brain injury, children with Williams syndrome and Downs syndrome), included the acquisition rate in comprehension and production and learning styles. The explanations offered, which included the nature of maternal input, the order of appearance of children in the family, the child's temperament, IQ, specific aspects of cognitive functioning and neurological differences allow the authors to state: "One conclusion seems uncontroversial: the average Child is a fiction, a descriptive convenience like the average Man or the average Women. Theories of language development can no longer rely on this mythical being" *(*Bates, Dale *&* Thal 1995:150).

The results of the study, enriched by investigations into gender- or cohort-based differences in language use (e.g., of Pope John Paul II-generation in Poland), styles of communication within particular families and language use marked for status or education, should confirm theoretical neurolinguistic findings and support attempts to study translation using methods involving translators.

4. INCORPORATING AN ANALYSIS OF THE TRANSLATOR'S IDENTITY. Including the translator's identity in the regular analysis of a translation is truly tempting in cases when the translation is correct but the modality of two texts is different: one is more passionate or genteel or vulgar or biased in some way than the other. Colleagues and students at my institute of applied linguistics who choose translation as their line of research frequently experience surprise and dismay when confronted with translations of texts they know in the original or the original of literary works they have first read as translations. Moreover, those who are ambilingual admit to differing in their translating strategies from those with one language clearly dominant.

My recent personal experience in this field is connected with the novel *Arthur and George* by Julian Barnes (2005) and its translation into Polish by Joanna Puchalska two years later. The novel features two main characters: George Edalji, a lawyer, and Arthur Conan Doyle, a physician and a writer, the author of the Sherlock Holmes adventures. The life stories of Edalji and Conan Doyle become intertwined when Edalji is unjustly sentenced to imprisonment for deeds he has not committed and Conan Doyle involves himself in the process of Edalji's rehabilitation. The language register is quite formal, the translation is good, but my perception of the atmosphere of the two texts is that they differ. In an attempt to solve the mystery, I decided to translate Barnes's text *a vista,* all 700 pages of it, and compare it with the published translation. An analysis of about 100 differences has been complemented by comments of the translator, as Joanna Puchalska kindly agreed to discuss her work with me. The following paragraphs present some results of the study (Zaliwska-Okrutna in press).

The set of discrepancies includes differences in judgement of what was time- and place-appropriate in the days of Edalji and Conan Doyle; in the attitude toward the amount of specialized vocabulary that can be presented to the Polish reader; in the interpretation of particular contexts and the assignment of culture-specific characteristics to the text, e.g.:

- For one translator the "canoodling couple" (Barnes 2005:173) is a 'cuddling couple', for the other—merely a 'couple in love', because the place in which the couple is spotted is the court building at the beginning of the twentieth century and showing affection in the form of cuddling would be grossly inappropriate there;

- Opinions differ as to whether specific heraldry terms, e.g., "chevrons, estoiles, mullets, cinquefoils, crescents argent, and their glittering like" (Barnes 2005:7), should be rendered exactly in translation or whether only some heraldic flavour be left—in order to allow the average target language recipient to read the book without resorting to specialized dictionaries;
- One translator interprets *superior control of the horse* in the sentence "She will ride with him flank to flank, if not—given her superior control of a horse—a little ahead" (Barnes 2005:310), as a 'control of the horse superior to that of the gentleman beside her', the other one as simply a 'very good control of the horse' on the grounds that the woman in question, Conan Doyle's fiancée, was not one to show in any way her superiority to the man she loved;
- A sergeant stalking Edalji, described as "a red-faced man with the build of a blacksmith" on one occasion (Barnes 2005:35), and "red-faced and puffing" (Barnes 2005:41) on another, may appear quite threatening or merely showing exasperation and effort;
- The same sergeant may question Edalji according to the English culture-specific script or according to the Polish one;
- Similarly, Conan Doyle's childhood experience of being exposed to the *horror of death* ("Perhaps the door had been deliberately left ajar. There might have been a desire to impress upon the child the horror of death; or, more optimistically, to show him that death was nothing to be feared" [Barnes 2005:3]) is for one of us more frightening, for the other—more majestic, on the grounds that the attitude of the particular family towards the child should be taken into consideration, the fact that no one there would be willing to deliberately frighten the child;
- A group of differences includes examples like "But this is daylight robbery', Arthur shouted. 'Daylight robbery!'" (Barnes 2005:29), in which the repeated phrase in English is either preserved in Polish or considered unnecessary, not in character with the Polish language;
- In several instances one translator opts for a particular version because "this is what the author says" or "this is how I understand it"; the other one yet gives justifications like "it doesn't sound right in Polish," "this is how the situation looks to me".

Joanna Puchalska and I share the experience of having attended school with an extended programme of English as a foreign language; Joanna Puchalska attended courses of English in Great Britain and informally completed the course of studies at the university English language department. She is an M.A. in art history and a practising translator specializing in literary texts. My experience with translation is insignificant, though I specialized in translation in the course of language studies in Poland and spent several years in the United States and then in Great Britain, studying linguistics and psychology.

The results point to clear differences in the organization of our cognitive systems, incorporating two different types of bilingualism. They suggest that Joanna Puchalska is a person with right hemispheric dominance in information processing. This is indicated by visualizations, audializations and a holistic approach to characters and situations: She visualizes the situations described in the original, interprets them against the background of the whole text and beyond, reads the portions of the translated text aloud and asks other people to do it for her. Her interpretations are oriented towards a prospective target-reader. My concentration on the word suggests left hemispheric dominance in information processing, and my extended exposure to English in its natural environment may be responsible for foreign-culture orientation in rendering the translated text; it might also be the reason for my dissatisfaction with any translation I produce and reluctance to translate in general.

The differences not discussed here refer to the wider and practical context of publication policies. Even if the study itself and its results are modest, it seems that that one may get new insight into translation by investigating a translator's identity, glottic identity to be exact, or at least those aspects of it that are accessible to investigation.

5. GLOTTIC IDENTITY. Glottic identity needs qualification to distinguish it from the type of identity commonly used in other branches of knowledge interested in people, society and culture, like psychology, where it connotes with such classic material as that of Paul Ricœur, Erik Erikson, Lawrence Kohlberg, Jean Piaget or Sigmund Freud. As a rule, by identity one understands a set of features that make one person different from others as well as this person's awareness of the relationship between self and other people; three elements included in most definitions of identity are stability, internal integrity, and dissimilarity (Mamzer 2002). Identity is at present a fashionable term in Europe, not only as an effect of integration and globalization tendencies, but also in the context of new technology-mediated challenges and discourse oriented research; Benwell and Stokoe (2005), for example, distinguish conversational, institutional, narrative, commodified, spatial and virtual identities.

Glottic identity appears in the writings of Roy Harris, the main proponent of integrationalism, in his discussion of the nature of language: "The concept of 'a language' belongs with those in terms of which individuals and communities construct a glottic identity for themselves, and in different cultures this can be done in very different ways" (1998:55). Harris also stresses that the European tradition of dealing with language relies on language description, which, from the integrational perspective, is

> only one of possible components in the construction of a glottic identity. Other metalinguistic components may involve the classification of forms of speech by reference to sex, social status, age, etc. And there may be important criteria which are recognized in the community, but are not reflected in any specific metalinguistic terminology… (1998:57).

This reflects the general attitude of integrationalism that treats "language as manifested in a complex of human abilities and activities that are all integrated in social interaction" (Harris 1987:132). In other words, this approach is an alternative to treating language as an object of study in its own right, and it implies that "the linguistic universe is not populated by mysteriously unobservable objects called 'languages' but by observable human beings who somehow and sometimes manage to communicate with one another" (1990:67). There is "no place for context-free meanings" in integrationist theory (1998:233) and any translation, intra- or inter-lingual, is context-dependent. In personal communication with Marshall Morris (1998[1992]), Harris expresses his objections to non-integrational theories of translation, whether transference or replicational in character (oriented towards the message or the text, respectively), on the grounds that they assume invariance of signs in the language and trace the problems in translation to "a lack of match between the invariant signs" (1998[1992]:316), while translation, treated integrationally, demands providing, simultaneously, contextualized identities to the two sets of signs—one in the source language and one in the target language. Every such act presupposes the existence of "communicational infrastructure" defined by Harris (1984, 1996) as the combination of three types of factors: biomechanical, macrosocial, and circumstantial; they relate, respectively, to human neuro-physiological capacities, social practices and situational details. Social practices are announced by Harris to be "obvious to more or less everybody—they show up only when behaviour is studied en masse" (1996:30), and his interest in context-dependency of signs situates his discussion primarily in the circumstantial domain. Lamb is concerned primarily with the neurocognitive aspects of human functioning, which partly overlap Harris's definition of the biomechanical but also offer insight into areas not considered by Harris. Together the two theories may provide an interesting framework for the translator-oriented trend in translation.

6. ETHOLINGUISTICS. *Etholinguistic* (not *ethnolinguistic*) models are concerned here. Each of the two theoretical models discussed above focuses on a different aspect, or face, of language use, a different portion of etholinguistic reality: the neurocognitive face of the discussion of glottic identity in translation may appear in the consideration of cognitive subsystems, neurological equipment, temperament, information-processing style or type of bilingualism of translators; the integrative face of glottic identity is seen in reference to locational, temporal, or ideological aspects in translator-oriented translation study. As studies ethological in character involve investigating behavior, both genetically and environmentally related, the postulated etholinguistic trend is about investigating language behavior in analogically dual configuration.

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